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USSR Report

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USSR REPORT

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BIOMEDICAL AND BEHAVIORAL SCIENCES

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PHARMACOLOGY AND TOXICOLOGY

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AGROTECHNOLOGY

UDC 632.4:633.11:532.285.2

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Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 20, No 4, Jul-Aug 86 (manuscript received 18 Mar 85) pp 281-285

[Article by G. Vizarova, L.S. Shashkova, V.V. Mazin, I. Vozar and C. Paulek, Institute of Experimental Biology and Ecology, Slovak Academy of Sciences, Bratislava; Main Botanical Garden, USSR Academy of Sciences, Moscow]

[Abstract] In order to define the correlation between cytokinin levels in wheat leaves and susceptibility to infection by Puccinia graminis, determinations were conducted on the effects of such infection on the concentration of free cytokinin in wheat varieties differing in susceptibility to the pathogen. The following varieties of wheat were employed: Grecum 114 (moderately susceptible), Little Club (highly susceptible) and Khapli (resistant). Changes in the cytokinin levels were particularly striking in the case of Grecum 114: after an initial decrease, the cytokinin concentration rose markedly between 4 and 7 days after infection and exceeded that in control leaves. The rise in the cytokinins antedated uredospore formation by the pathogen. In addition, TLC revealed the presence of a novel cytokinin. The latter was also detected in infected Little Club leaves but was entirely absent in Khapli leaves that showed no evidence of pathology. The greatest increase in cytokinin levels was observed in the highly susceptible Little Club leaves. Figures 2; references 22: 1 Bulgarian, 3 Hungarian, 4 Russian, 8 Slovak, 6 Western.

12172/9835
CSO: 1840/129

UDC 632.937.14

CORRELATION BETWEEN MORPHOLOGICAL DIFFERENTIATION OF ENTOMOPHTHORA THAXTERIANA PETCH AND SYNTHESIS OF SECONDARY METABOLITES

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 20, No 4, Jul-Aug 86 (manuscript received 19 Jul 85) pp 266-270

[Article by E.G. Voronina, G.M. Gindina and I.I. Novikova, All-Union Institute of Plant Protection, Leningrad]

[Abstract] Growth curves of Entomophthora thaxteriana were analyzed as to morphological features and formation of insecticidal metabolites. The production of the latter was tested on the larvae of the pea aphid (Acyrthospihon pisum). The data demonstrated that 1-day cultures containing hyphal bodies were innocuous for the aphids. Some toxicity was shown by the 2-day culture marked by initial stages of sporulation. Highest lethality was exhibited by the 3-day culture, which coincided with a high rate of sporulation. Both spore and mycelial suspensions were insecticidal, indicating that toxin formation was related to spore formation and had its initiation after the phase of vegetative fungal growth. Figures 3; references 16: 10 Russian, 6 Western.

12172/9835
CSO: 1840/129

UDC 595.787:632.936.2

ATTRACTIVE POWER OF SOME EPOXY COMPOUNDS FOR TIGER MOTH MALES PHRAGMATORIA FULIGINOSA (ARCTIIDAE) AND FOR GEOMETRID MOTH CAUSTOLOMA (THERAPIS) FLAVICARIA (GEOMETRIIDAE)

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 65, No 5, May 86 (manuscript received 7 Jan 85) pp 802-804

[Article by B.G. Kovalev and L.A. Nikolayeva, All-Union Scientific Research Institute of Biological Methods for Protection of Plants, Kishinev]

[Abstract] Cis-3, cis-6, cis-9,10-epoxygeneicosadiene (I), cis-9,cis-12-octadecadienal (II) and cis,9,cis-13,cis-15-octadecatrienal (III) were previously shown to be components of sex pheromones. Racemic epoxide of (I) was synthesized along with cis-6,cis-9,10-epoxygeneikosene (IV) and cis-6,trans-9,10-epoxygeneikosene(V) and used in field studies against tiger moth and geometrid moth. A mixture of (I), (II) and (III) at a dose of 10^{-3} g attracted male tiger moth; at the same dose (IV) was effective against the geometrid moth. References 6 (Western).

7813/9835
CSO: 1840/075

BIOCHEMISTRY

UDC: 579.843.4;577.,152.1

EFFECT OF PHENOBARBITAL ON BACTERIAL LUCIFERASE OF PHOTOBACTERIUM FISCHERI

Moscow MIKROBIOLOGIYA in Russian Vol 54, No 4, Jul-Aug 85
(manuscript received 2 Nov 83) pp 587-591

[Article by V.S. Danilov, Biology Faculty, Moscow State University imeni M.V. Lomonosov]

[Abstract] Many chemical compounds immediately inhibit luminescence in marine bacteria. This article studies the interaction of the marine luminescent bacteria Photobacterium (Vibrio) fischeri with bacterial luciferase of one of the most typical cytochrome P-450 substrates (phenobarbital) from other organisms. Experiments were performed on a bacterial luciferase preparation to determine whether phenobarbital is a cytochrome P-450 substrate. The experimental material indicated that phenobarbital did effectively inhibit bioluminescence of intact P. fischeri cells, possibly as a result of this interaction with the luciferase or the entire luminescent system. The effect may be mediated. Inhibitor analysis demonstrated that inhibition was accompanied by a competitive interaction of phenobarbital with the luciferase substrate, and aliphatic aldehyde. Figures 4; references 20: 10 Russian, 10 Western.

6508/9835
CSO: 1840/086

UDC 547.963.32

REPRESSION OF β-GALACTOSIDASE SYNTHESIS BY ISOPROPYLTHIOGALACTOSIDE AS A RESULT OF INDUCTION OF 'ANTISENSE RNA'

Moscow DOKLADY AKADEMII NAUK SSSR in Russian Vol 290, No 6, Oct 86 (manuscript received 4 Apr 86) pp 1499-1502

[Article by O.B. Yarchuk, I.N. Troyanovskaya and N.I. Matviyenko, Institute of Protein, USSR Academy of Sciences; Branch of Bioorganic Chemistry Institute imeni M.M. Shemyakin, USSR Academy of Sciences, Pushchino, Moscow Oblast]

[Abstract] Experimental results were reported on achievement of regulation effect by means of antisense [see Melton, D.A., Proc. Nat. Acad. Sci. 81, 7, 1984] RNA towards the structural fragment of mRNA of β-galactosidase (I) gene without involving regions participating in translation initiation. Infection of E. coli JM 101 cells, containing the plasmid with β-galactosidase, with M13 phage, followed by cultivation of such culture at temperatures leading to incativation of CI 857 repressor in presence of isopropylthiogalactoside (IPTG) led to the synthesis of I gene mRNA and an antisense RNA towards it. In addition, RNA-RNA hybrids are formed preventing effective translation of such m-RNA's. Effectiveness of antisense RNA depends on their length. A 367 nucleotide fragment inhibited, by 25%, the synthesis of I while a 140 nucleotide antisense RNA used in this study inhibited protein synthesis by 70%. In addition to the length of antisense RNA, its relationship to mRNA is very important to achieve maximum effectiveness. Figures 3; references 13: 2 Russian (1 by Western author), 11 Western.

7813/9835
CSO: 1840/144

UDC [579.851.11.083.134.037:547.455.623] :547.211.057

KINETIC REGULARITIES AND MECHANISM OF METHANE FORMATION BY METHANOGENIC ASSOCIATION. Part 2. STUDY OF DYNAMICS OF GLUCOSE CONVERSION

Moscow BIOTEKHNOLOGIYA in Russian No 3, May-Jun 86 (manuscript received 27 Nov 85) pp 70-77

[Article by S.V. Kalyuzhnyy and S.D. Varfolomeyev, Moscow State University imeni M.V. Lomonosov]

[Abstract] A study of the kinetics of methanogenesis of glucose with use of the association Methanobacillus kuzneceovii is described and discussed. The lag-period of methane formation decreased significantly in a hydrogen atmosphere but the process of methane formation itself proceeded more intensely. Optimum conditions for carrying out the process were found to be pH 6.5-7.0 and initial glucose concentration of 20-30 mM. Basic chemical reactions of the process and their sequence are presented and discussed briefly. Study of the dynamics of conversion of glucose and its intermediates into methane in the presence of the association made it possible to compile a kinetic scheme of the process, which is presented. Stoichiometric relationships between the basic products and substrates of the process and a kinetic shceme of the conversion of glucose into methane were established. Figures 12; references 10: 7 Russian, 3 Western.

2791/9835
CSO: 1840/031

UDC 66.067.5

PRECIPITATION FILTERING CENTRIFUGES FOR SEPARATING BIOTECHNOLOGY PRODUCTION PRODUCTS

Moscow BIOTEKHNOLOGIYA in Russian No 3, May-Jun 86
(manuscript received 20 Sep 85) pp 78-83

[Article by A.I. Guslavskiy, B.L. Chamortsev and Al.I. Guslavskiy, All-Union Scientific Research Institute of Protein Biosynthesis, Moscow]

[Abstract] A new technique for separating biotechnological suspensions by centrifugation is described and discussed. Basic mathematical models of the process of precipitate-free centrifugal filtration are presented. Experimental samples of centrifuges of different designs and their characteristics are presented. Parameters of the filtering element determine the effectiveness of the precipitation-filtering centrifuges discussed. Information found in the study may be used during development of high-productive industrial precipitation-filtering centrifuges for biotechnological production. Figure 1; references 7 (Russian).

2791/9835
CSO: 1840/031

UDC 663.1:577.112

CONSTRUCTION OF INDUSTRIAL LINES FOR PRODUCTION OF MICROBIAL BIOMASS CULTURED ON GASEOUS NUTRIENTS

Moscow BIOTEKHNOLOGIYA in Russian No 3, May-Jun 86
(manuscript received 14 Oct 85) pp 104-109

[Article by V.N. Danilov, B.G. Litvak and L.Ye. Likhogrudova, All-Union Scientific Research Biotechnic Institute, Moscow]

[Abstract] Organization of industrial lines for production of hydrogen-oxidizing bacteria biomass is described and discussed. The organization required consideration of stages of fermentation, coagulation, filtration, separation and drying of the product. Various methods of carrying out stages of the process are described. Analysis of comparative effectiveness of alternative versions of structure of basic stages of the technological process, which made it possible to select the best variant, is described. Use of computer technology using an algorithm developed by the author to determine the best variant is described. References 9 (Russian).

2791/9835
CSO: 1840/031

UDC 663.14.012-52:636.087.73

USE OF MICROPROCESSOR MEANS TO CONTROL FERMENTATION DURING BIOMASS PRODUCTION

Moscow BIOTEKHNOLOGIYA in Russian No 3, May-Jun 86
(manuscript received 25 Nov 85) pp 117-120

[Article by I.M. Chirkov, Yu.Kh. Mantushev and L.N. Lein, All-Union Scientific Research Institute of Protein Biosynthesis, Moscow]

[Abstract] A system of control of the fermentation process during biomass production is described and discussed. The system is based on a Remikont type regulating microcontroller and a UVKS SM-1800 control computer complex which can service 6 industrial fermenters while performing ongoing optimization of the fermentation process according to the physiological state of the microorganisms by correcting the flow-through and medium composition.

2791/9835
CSO: 1840/031

UDC 591.5.595.773.4

PROSPECTS IN USE OF MUSCA DOMESTICA FOR BIODEGRADATION OF DOMESTIC WASTES

Sverdlovsk EKOLOGIYA in Russian No 4, Jul-Aug 86
(manuscript received 6 Jun 85) pp 45-50

[Article by Ye.G. Golubeva, Institute of Animal Evolutionary Morphology and Ecology imeni A.N. Severtsov, USSR Academy of Sciences]

[Abstract] Development of housefly (Musca domestica L.) larvae was monitored on human excreta, to determine the efficiency of the housefly in biodegradation of human wastes. The survival and growth data showed that housefly larvae were efficient in assimilating the organic components of human wastes, and therefore are an important agent for biodegradation. In addition, the larvae were equally effective in digestion of human excreta with 10-20% quail droppings, as well as mixtures with 20% quail droppings and mineralized wheat straw. On these grounds, housefly larvae appear to be a promising agent for waste processing in large cities. Figures 3; references 15: 10 Russian, 5 Western.

12172/9835
CSO: 1840/078

UDC 575.1

HYBRIDIZATION OF SOMATIC CELLS AND POSSIBILITIES OF ANALYSIS AND MANIPULATION OF CYTOPLASM GENES OF HIGHER PLANTS

Kiev BIOPOLIMERY I KLETKA in Russian Vol 2, No 1, Jan-Feb 86
(manuscript received 10 Jul 85) pp 5-11

[Article by Yu.Yu. Gleba and I.V. Myashkene, Institute of Botany imeni N.G. Kholodniy, UkSSR Academy of Sciences, Kiev, Institute of Botany, LiSSR Academy of Sciences, Vilnyus]

[Abstract] The present situation in regard to solution of problems of transmission genetics involving the process of somatic hybridization (the presence of cytoplasmic heterozygotes among parasexual progeny, the presence or absence of selective pressure in the process of mitotic segregation of plasmagenes, cosegregation of plasmagenes, genetic recombination of plasmagenes, genetic diversity of cytoplasms arising during somatic hybridization and practical possibilities associated with genetic reconstruction of cytoplasm) are described and discussed briefly. Hybridization of somatic cells make it possible to create new combinations of parental plasmagenes in higher plants, especially plants which are heterozygotic in terms of extra-nuclear genes, plants with a nucleus of one kind and cytoplasm of another and plants carrying a stable set of some extra-nuclear genes of 1 parent plus a set of other extra-nuclear genes of another. Some practical possibilities ensuing from these advances in hybridization are discussed briefly. References 26: 4 Russian, 22 Western.

2791/9835
CSO: 1840/063

GENETIC ENGINEERING ON SERVICE OF PUBLIC HEALTH

Moscow PRIRODA in Russian No 10, Oct 86 pp 3-13

[Article by Ye.D. Sverdlov, Chief Laboratory of Nucleic Acids Biotechnology, Institute of Bioorganic Chemistry imeni M.M. Shemyakin, USSR Academy of Sciences]

[Abstract] The number of diseases which affect living creatures is continuously increasing. On one side of their spectrum are inheritable diseases and on the other those caused by external factors. Genetic disorders are due to injury of a single gene which often leads to irreversible consequences. Many current health problems are being solved by genetic engineering; one of the principal methods used in this science is cloning. In a popular, instructive manner, this article describes fundamental concepts and techniques of genetic engineering in lay terms (clones, genetic banks, libraries, etc.). Modern molecular biological methods have led to isolation and identification

of individual nucleotide sequences. This knowledge then led to discovery of the structure of a genome and mechanisms of its functions. Mapping of genomes led to novel prenatal diagnos ic techniques based on analysis of chromosomes. The eventual goal of these advances is genetic therapy which, although still in early developmental stages, will bring novel procedures for presently incurable diseases. Figures 4; references 4 (Russian).

7813/9835
CSO: 1840/174

ENVIRONMENT

UDC 577.41/6:577.391

RADIOECOLOGICAL STUDIES IN URALS

Sverdlovsk EKOLOGIYA in Russian No 4, Jul-Aug 86
(manuscript received 23 Dec 85) pp 65-71

[Article by N.V. Kulikov, Institute of Plant and Animal Ecology, Urals Scientific Center, USSR Academy of Sciences]

[Abstract] A review is presented of the research conducted on radioecology at the Institute of Plant and Animal Ecology since its founding 30 years ago. In the first decade of its existence (1955-1965) the studies were largely limited to the laboratory situation or small-scale environmental experiments to assess the migration of radionuclides in nature. The next decade (1965-1975) saw an expansion and a shift out of the laboratory to actual conditions in the environment. Finally, the present decade, commencing in 1975, saw a restructuring of research efforts to concentrate on the radioecological impact of nuclear power stations. Station and its environmental effects, and have contributed significantly to a better understanding of this type of anthropogenic intervention in ecology. References 45 (Russian).

12172/9835
CSO: 1840/078

UDC 579.252.5:579.841.32

TWO REGIONS IN PLASMID pTiC58 DETERMINE AUXIN PRODUCTION IN AGROBACTERIUM TUMEFACIENS

Moscow GENETIKA in Russian Vol 21, No 9, Sep 85
(manuscript received 15 Nov 84) pp 1428-1437

[Article by L.S. Chernin, I.D. Avdiyenko, N.I. Shchipkova, M.I. Ovadis and V.M. Andrianov, Institutes of Chemical Physics of General Genetics imeni N.I. Vavilov, and of Molecular Genetics, USSR Academy of Sciences, Moscow]

[Abstract] Since hormonal imbalance has been implicated in crown gall formation induced by bacteria with the nopaline plasmid pTiC58, hybrid plasmids were constructed in vivo and in vitro from pGV plasmids (incorporating various HindIII fragments from pTiC58) and IncP plasmids, and inserted into pTi$^-$ Agrobacterium tumefaciens to study the effects on auxin production. Analysis of the pattern of auxin production (indole-3-acetic acid; IAA)--which is inherently low in pTi$^-$ cells--resulted in the demonstration that, at the very least, two segments of pTiC58 DNA are involved in IAA synthesis. One of the sites was identified in the T-DNA region of pTiC58 which integrates with the genome of crown gall cells and encompasses HindIII-22 and HindIII-41 fragments of pTiC58 DNA. The other segment is located outside of the T-region and includes the HindIII-14a fragment, mutations in which diminish IAA synthesis and oncogenicity. It is evident, then, that IAA production in A. tumefaciens is under triple genetic control, involving at least two metabolic pathways for the synthesis of IAA. Mutation in pTiC58 or loss of the plasmid reduces the potential for crown gall induction by A. tumefaciens as a result of diminished IAA production, which in turn renders the plant a less suitable host for the bacterium. Figures 3; references 29: 6 Russian, 23 Western.

12172/9835
CSO: 1840/162

UDC 579.252.5:579.841.32

SPECTRUM AND MECHANISMS OF ONCOGENICITY OF GROUP IncW R PLASMIDS IN AGROBACTERIUM TUMEFACIENS

Moscow GENETIKA in Russian Vol 21, No 9, Sep 85
(manuscript received 15 Nov 84) pp 1438-1448

[Article by I.D. Avdiyenko, M.N. Sakharova, M.I. Ovadis, N.N. Zoz and L.S. Chernin, Institutes of General Genetics imeni N.I. Vavilov and of Chemical Physics, USSR Academy of Sciences, Moscow]

[Abstract] Since crown gall formation was shown to be dependent on indole-3-acetic acid (IAA) production by Agrobacterium tumefaciens, the effects of pSa and R388 plasmids (incompatibility group IncW)--known to inhibit crown gall oncogenicity--were assessed in these terms. Studies with pTi$^-$ A. tumefaciens cells and Onc$^+$ cells carrying the nopaline plasmid pTiC58 demonstrated that pSa and R388 abrogated pTiC58-mediated IAA production, but not IAA production under the control of chromosomal DNA. In addition, in one A. tumefaciens strain (ATCC 15955) pSa affected the LPS coat leading to loss of adhesiveness of the strain to plant cells. Application of exogenous IAA to tomato and pea plants infected with A. tumefaciens bearing pTiC58, and either pSa or R388, led to crown gall formation, indicating chemical complementarity and providing further support for the view that IAA is a key factor in A. tumefaciens oncogenicity. Figures 4; references 26: 6 Russian, 20 Western.

12172/9835
CSO: 1840/162

UDC 576.1:576.312.342:576.858.9

EXPRESSION OF TRANSPOSABLE PSEUDOMONAS AERUGINOSA PHAGES IN PSEUDOMONAS PUTIDA. PART 1. LYSOGENICITY AND LYTIC EFFICIENCY

Moscow GENETIKA in Russian Vol 21, No 9, Sep 85
(manuscript received 17 Dec 84) pp 1455-1463

[Article by S.A. Gorbunova, A.S. Yanenko, V.Z. Akhverdyan, M.A. Reulets and V.N. Krylov, All-Union Scientific Research Institute of Genetics and Selection of Industrial Microorganisms, Moscow]

[Abstract] Studies were conducted on the expression of Pseudomonas aeruginosa-specific phage D3112 cts15 in Ps. putida, in order to better assess the genetic potential of the latter species. The analytical studies demonstrated that integration of the D3112 cts15 genome in vivo into RP_4 plasmid facilitates transfer of the phage into Ps. putida PpG1 cells. In the latter system, high lytic efficiency of the phage was obtained both with zygotic induction after transfer of the RP4-D3112 cts15 hybrid, as well as with heat induction of Ps. putida PpG1 lysogenic for prophage D3112 cts15. The

high degree of transposition of D3112 cts15 in the Ps. putida cells was indicated by the high yield of viral particles (20-25/cell), quite comparable with the yield from Ps. aeruginosa PA01 cells (50-100 particles/cell). Although the transfer efficiency of RP4-D3112 cts15 into both species was comparable, the efficiency of lysogenicity was lower in the case of Ps. putida. These observations demonstrate that plasmid vectors may be used as effective vehicles for the transfer of transposable phages among species exhibiting considerable differences in their genomes. Figures 2; references 16: 6 Russian, 10 Western.

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CSO: 1840/162

UDC 638.11;633.14;631.523:631.527

GENETIC PRINCIPLES IN TRITICALE PRODUCTION. PART 2. IMPROVING EFFICIENCY OF TRITICALE PRODUCTION

Moscow GENETIKA in Russian Vol 21, No 9, Sep 85 (manuscript received 1 Nov 84) pp 1520-1526

[Article by I.A. Gordey and G.M. Gordey, Belorussian Scientific Research Institute of Agriculture, Minsk Oblast]

[Abstract] In order to improve the efficiency of triticale production stepwise hybridization was employed as follows: [(soft wheat, AABBDD, 2n = 42 X diploid rye, RR, 2n = 14) X hexaploid triticale, AABBRR, 2n = 42]. The F_1 wheat-rye hybrids were then treated either with colchicine via the rootstock at the onset of micro- and macrosporogenesis, or by gamma irradiation of the F_1 seeds with a 5 kR dose. Both methods were shown to increase the fertility of the F_1 wheat-rye hybrids 2- to 3-fold. Cytologic studies demonstrated that the F_1 triticales contained 42-49 chromosomes, with elimination of univalent chromosomes of the wheat D genome in the F_2-F_4 hybrids. Figures 1; references 10: 5 Russian, 5 Western.

12172/9835
CSO: 1840/162

UDC 616.006/.02:614.47

EFFECTS OF LIVE TULAREMIA VACCINE ON CHEMICAL MUTAGENESIS IN WHITE RATS

Moscow GENETIKA in Russian Vol 21, No 9, Sep 85
(manuscript received 30 Nov 84) pp 1507-1511

[Article by V.N. Zilfyan, A.K. Nersesyan, V.A. Kumkumadzhyan and B.S. Fichidzyan, Scientific Research Institute of Radiology and Oncology imeni V.A. Fanardzhyan, Armenian SSR Ministry of Health, Yerevan]

[Abstract] Studies were conducted on Wistar rats to further define the relationship between immune status and susceptibility to chemical mutagenesis, using a combination of immunization with a live tularemia vaccine and administration of various chemical mutagens. The animals were immunized by the application of the vaccine to scarified skin to give an estimated immunization dose of 2×10^7 cells, and injected intraperitoneally with either cyclophosphamide, methylnitrosourea, benz[a]pyrene, chloroprene, or 1,2,3,4-tetrachlorobutane 15 days later. Analysis of metaphasic plates of myelokaryocytes 24 h later showed that the number of cells with chromosomal abnormalities was reduced 1.5- to 2.6-fold in animals that had been immunized, in comparison with nonimmunized rats. The effectiveness of the live tularemia vaccine in mitigating the effects of chemical mutagens was attributed to an enhanced immune status of the rats as a result of immunization, as well as to the circulation of the bacterial cells since previous studies had demonstrated that live microorganisms enhance animal resistance to various exogenous factors. References 23: 14 Russian, 9 Western.

12172/9835
CSO: 1840/162

UDC 615.339:578.245].03.07

COMPARATIVE STUDIES ON ANTIPROLIFERATIVE ACTIVITIES OF PLACENTAL INTERFERONS

Moscow VOPROSY VIRUSOLOGII in Russian Vol 30, No 5, Sep-Oct 85
(manuscript received 7 Feb 85) pp 586-589

[Article by D.K. Mkervalishvili, D.G. Merabishvili, L.L. Dzotsenidze, V.I. Bakhutashvili, S.A. Kupradze and B.M. Korsantiya, Institute of Experimental Morphology, Georgian SSR Academy of Sciences, Tbilisi]

[Abstract] A comparative evaluation was carried out on the relative antimitotic activities of interferon preparations derived from human placenta (amniotic and chorionic) and leucocytes, to determine whether the former could serve as a ready source of these agents. Exposure of a variety of human and nonhuman cell lines (HeLa, L-41, CaOv, Vero, BHK, human fibroblasts) to equivalent concentrations for 24 and 48 h demonstrated that amniotic interferon showed its greatest activity against tumor cells of human origin, often exceeding the activity of leucocytic interferon. Chorionic interferon was generally less effective in this respect. The data indicated that the human placenta shows promise as a source of human interferon preparations. Tables 2; references 10: 1 Russian, 9 Western.

12172/9835
CSO: 1840/175

UDC 578.833.:578.74].083.224

HYBRIDOMA CLONING BY END-POINT DILUTION TECHNIQUE

Moscow VOPROSY VIRUSOLOGII in Russian Vol 30, No 5, Sep-Oct 85
(manuscript received 21 Sep 84) pp 602-608

[Article by A.S. Novokhatskiy, I.V. Malakhova and T.G. Mikheyeva, Institute of Virology imeni D.I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow]

[Abstract] In order to maintain activity and stability of monoclonal antibody-secreting hybridomas, an end-point dilution technique was utilized for serial recloning. The study was conducted with four hybridomas producing antiviral antibodies with dilution into 96-well Linbro plates, containing splenic feeder cells derived from unimmunized BALB/c mice. Prior to cloning (24 h), the hybridoma cells were diluted 1:2 with growth medium to induce the cells to enter the logarithmic phase of growth. With dilution there was a progressive decrease in the number of clones per well and an increase in antibody production. The proportion of wells with single clones, with introduction of one cell per well, ranged from 5.4 to 37.5% for the different hybridomas (KAMA-51, OKA, MAK-14-7, KEN-6-4).

Recloning also had the beneficial effect of improving the growth characteristics, as well as increasing the antibody yield. Figures 2; references 17: 2 Russian, 15 Western.

12172/9835
CSO: 1840/175

MONOGRAPH ON RECENT GENETIC ADVANCES

Frunze SOVETSKAYA KIRGIZIYA in Russian 19 Sep 86 p 3

[Article by G. Zelenko, Academy of Pedagogical Sciences]

[Abstract] A considerable contribution to present knowledge about the instability of the genome was made by the late Academician R.B. Khesin-Lurye, as summarized in his monograph entitled "Instability of the Genome". Khesin-Lurye postulated, and recent studies have confirmed, that the gene complement of various organisms is not an inviolate factor, but subject to considerable variation in nature. It has come to be appreciated that not all genes are expressed at the same time, but take turns--as it were--in expressing themselves. In addition, some genes fall into the category of 'jumping genes' in that they can translocate from one segment of the chromosome to another, and some genetic elements even cross generic and species lines. All of these observations remain to be further defined and fitted into the known facts and concepts of evolution, function, and pathogenesis.

12172/9835
CSO: 1840/168

UDC 616.98:578.832.1]084.47-07:616.15-097.34

DYNAMICS OF ANTIHEMAGGLUTININ LEVELS IN INDIVIDUALS IMMUNIZED YEARLY WITH INACTIVATED INFLUENZA VACCINE

Moscow VOPROSY VIRUSOLOGII in Russian Vol 30, No 5, Sep-Oct 85 (manuscript received 28 Nov 84) pp 536-540

[Article by A.A. Selivanov, L.G. Rudenko and M.P. Zykov (dec.), Military Medical Academy imeni S.M. Kirov, All-Union Scientific Research Institute of Influenza, USSR Ministry of Health, Leningrad]

[Abstract] To assess the effectiveness of influenza vaccination, a group of 1200 young individuals was monitored for the antihemagglutinin response to immunization with an inactivated influenza A H3N2 and H1N1 vaccine in 1980, 1981 and 1983. Evaluation of the effects of repeated immunization on the antibody levels demonstrated that in 71.1% of the subjects revaccination

had no positive effect, and in some cases revaccination caused a reduction in the antihemagglutin titers. In 12.2% of the cases a positive response was obtained with 2 vaccinations, and in only 6.7% with 3 vaccinations. An additional 1155 subjects were monitored for a combination of inactivated + experimental, moderately attenuated live vaccine (A/Leningrad/323/76/20 (H3N2) and A/Texas/77/10 (H3N2)). The data showed that intranasal administration of the attenuated vaccine 1.5 to 2 months after the inactivated vaccine elicited an adequate immune response in 64.7% of the subjects sufficient to render full protection. An additional 11.5% of the subjects would be expected to develop an asymptomatic infection, while 23.8% were considered to remain unprotected and, therefore, in need of further protection. References 1 (Western).

12172/9835
CSO: 1840/175

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TRANSSCLERAL RUBY LASER COAGULATION IN EXPERIMENTS ON ANIMALS

Odessa OFTALMOLOGICHESKIY ZHURNAL in Russian No. 5, 1985
(manuscript received 21 Feb 85) pp 300-302

[Article by S.G. LEGEZA, physician, A.P. PRIVALOV, senior engineer, Odessa Scientific Research Institute of eye diseases and tissue therapy imeni Academic V.P. Filatov]

[Text] Over the twenty years that lasers have been used in clinical and experimental ophthalmology, scores of laser therapy methods have been developed which are being used successfully in treating many serious disorders of the visual organ.

Due to the unique optical and spectral nature of the eye and the development of laser technology, there are a variety of methods for treating intraocular structures with laser radiation within broad spectral and temporal ranges.

Generally, all methods of laser therapy are based on the transpupillar treatment of the tissue of the eye fundus. Recent studies of vitreocoagulation using lasers testify to a certain amount of progress and to the extreme traumatism of this method of treatment. [12]

Earlier studies on the transscleral treatment of the intraocular structures have not revealed the pros and cons of the method. [1 - 11]

Therefore, the purpose of this study was to determine through experiments on rabbits the feasibility of transscleral ruby laser coagulation.

Tests were done on 4Ø "Flander" and "Chinchilla" rabbits (8Ø eyes) aged 1.5 to 2 years and weighing an average of 2.5 kg.

The radiation source was a "TsVET" (COLOR) ruby laser (wave length Ø.6943 mkm) operating at a quasicontinuous rate with

maximum (output) energy of 4 J. Both a parallel and a focused beam were used. The energy density was from 7 to 26 J/cm^2 at the focal point when a parallel beam was used, and from 24 to 3200 J/cm^2 when the beam was focused on the inner surface of the sclera (Table 1).

Figure 1 shows the schematic diagram of an experimental device for the transscleral irradiation of the eye of a laboratory animal using a focused ruby laser beam. The drawing shows how a laser beam projected through a flat parallel plate, a diaphragm, and a collecting lens with a focusing distance of 60 mm is focused and falls on the sclera of the rabbit's eye.

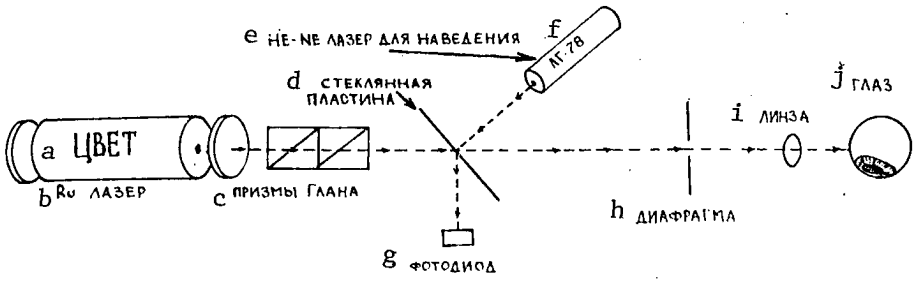

Рис. 1. Принципиальная схема экспериментальной установки для транссклерального облучения, собранной на базе рубинового лазера.

Figure 1. Schematic diagram of an experimental device for transscleral irradiation, constructed on a ruby laser base. a - TsVET (COLOR); b - Ruby Laser; c - Glan Prisms; d - Glass Plate; e - NE Laser for guidance; f - LG-78; g - Photodiode; h - Diaphragm; i - Lens; j - eye.

Table 1 shows the distribution of rabbit eyes in relation to the ruby laser energies used in transscleral treatment.

Таблица 1

b Форма луча	Энергия на выходе с в Дж	d Плотность энергии в пятне в Дж/см²	e Кол-во кроликов и глаз
f Параллельный луч	0,5	7	2/4
	0,6	9	2/4
	1,8	26	2/4
g Сфокусированный луч	0,03	24	2/4
	0,04	32	2/4
	0,06	48	2/4
	0,1	80	2/4
	0,25	200	2/4
	0,3	240	4/8
	0,35	280	4/8
	0,4	320	4/8
	0,6	480	2/4
	0,7	560	2/4
	0,75	600	2/4
	1,0	800	2/4
	1,4	1120	1/2
	2,0	1600	1/2
	3,0	2400	1/2
	4,0	3200	1/2
h Итого:			40/80

a - Table 1; b - type of beam; c - Output energy in J; d - Energy density at focal point, J/cm^2 ; e - Number of rabbits and eyes; f - Parallel beam; g - Focused beam; h - total

Immediately before each test, the rabbit's pupils were thoroughly dilated using a 1% atropine sulfate solution, and drops of a .5% dicaine solution were administered to the eyes. The eyes were dislocated from the orbit with a glass rod and held in place by a polychlorvinyl frenulum. Throughout the test, the eyes were bathed in a wetting solution.

Transscleral laser applications were administered as close to the equator of the eye as possible so that changes in the inner coats of the eye could be analyzed with an ophthalmoscope.

Rabbit eyes subjected to transscleral ruby laser treatment were examined immediately after irradiation, and at intervals of 24 hours, 6, 16, 24, and 30 days.

Analysis of the data collected reveals that transscleral ruby laser coagulation causes various types of trauma to rabbit eye tissue, depending on the energy density used in treatment.

An unfocused laser beam with energies of Ø.5-Ø.6 J (radiation energy density 7-9 J/cm^2) does not cause any changes in the eye fundus immediately after transscleral treatment. Retinal discoloration was found immediately after exposure only when the energy in the zone of transscleral laser exposure was 1.8 J (radiation energy density 26 J/cm^2). Subsequently, a coagulation center developed in this area during the second 24-hour period, and then a scar developed there over the next sixteen days.

When a ruby laser beam with energies from Ø.Ø3 to Ø.Ø6 J (radiation energy density from 24-48 J/cm^2) was focused on the inner scleral surface, coagulation centers no more than .4 mm in diameter, in which the inflammation reaction gradually faded and by the 24th day was barely discernible against the background of the retina, were found with an ophthalmoscope immediately after application in the zone subjected to transscleral treatment.

As the energy of the ruby laser is increased, its transscleral effect on the inner coats also becomes more pronounced. Energies beginning at Ø.25 J (radiation energy density beginning at 2ØØ J/cm^2) lead to the formation of pronounced coagulation centers immediately after irradiation. The centers are uniform, whitish and protrude significantly into the vitreous body. Their size ranges up to 1 mm.

During the second twenty four hour period, a well-defined coagulation center with a white middle and a clearly-defined grey-pink border area was visible. Lumps of pigment were visible in the vitreous body above the coagulation center. Signs of postcoagulation inflammation occurred on the sixth day after irradiation. A well-defined white border was seen around the whitish centers. On the sixteenth day, the coagulates appeared to be moderately pigmented spots with yellowish fingula. On the twenty-fourth and thirtieth days, the centers had very indefinite borders and uneven pigmentation, which was much more pronounced on the thirtieth day.

With a further increase in ruby laser energy, beginning at Ø.4 J (radiation energy density beginning at 32Ø J/cm^2), the transscleral effect of the laser on the retina assumes a destructive nature. Immediately after irradiation, grey, edematic coagulation centers with torn pieces of retina in the middle were found. A unique characteristic of the effect of this energy during transscleral irradiation is the presence of retinal defects with slight hemorrhaging into the vitreous body and the uneven distribution of postcoagulation edema and pigment.

On the sixth day, the intravitreal hemorrhages resolved. On the sixteenth, the edema had completely passed. On the twenty-fourth day, a more evenly and intensely pigmented border and a thick net of obliterated vessels were visible around the irregularly pigmented center. On the thirtieth day, the center of transscleral exposure appeared as a heavily pigmented spot of irregular shape.

When the ruby laser energy was increased up to 1 J (radiation energy density up to 800 J/cm^2) the severity of the damage to the inner coats was even more pronounced and was accompanied by profuse hemorrhaging into the vitreous body.

Upon transscleral exposure to high ruby laser energies up to 4 J (radiation energy density up to 3200 J /cm^2), a steam bubble formed and was accompanied by the crater-like rupturing of the inner coats, which swelled and protruded into the vitreous body, toward which tissue detritus combined with bloody masses was also discharged.

The following conclusions can be drawn from the experiments conducted:

1. It was shown that the transscleral treatment of the inner structure of the eye with laser radiation from Soviet-made series ruby ophthalmocoagulators is feasible.

2. It was determined through experiments that the conspicuousness of the changes in the intraocular tissues depends on the radiation energy density.

3. It was established that transscleral ruby laser irradiation with a radiation energy density of 200 J/cm^2 leads to the formation of pronounced coagulation centers.

4. Throughout our investigation of transscleral ruby laser coagulation, not one instance of change in the sclera or vitreous body in the irradiated area was observed.

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UDC 617.7-007.681-08:617.721-089.87:615.849.19

IRIDECTOMY IN CASES WITH LASER-REFRACTORY IRIS

Moscow VESTNIK OFTALMOLOGII in Russian Vol 102, No 5, Sep-Oct 86
(manuscript received 26 Dec 85) pp 15-17

[Article by V.I. Shurkin, Main Administration, Railway Hospital imeni N.A. Semashko, Moscow Railways, USSR Ministry of Communication]

[Abstract] Failure of ruby-laser therapy in several cases of narrow and closed-angle glaucoma led to a study of the anatomic factors that may affect the outcome of such a therapeutic approach. A study on 30 patients (36 eyes) with primary narrow- and closed-angle glaucomas led to the conclusion that single-pulse ruby-laser therapy was likely to be ineffective in patients with a well developed laser-transparent anterior membrane, showing a success rate of 17%. A second pulse-irradiation was required to improve the success rate to 78%. However, patients with an optically dense, thin membrane had a success rate of 78% after a single therapeutic irradiation. These anatomic observations suggest that, at the very least, one of the factors leading to failure of ruby-laser iridectomy is the presence of a laser-transparent membrane that is sufficiently dense to counteract the impact of the laser shock wave. References 5 (Russian).

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CSO: 1840/132

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EFFECTIVENESS OF LASER TRABECULOPLASTY IN PRIMARY OPEN ANGLE GLAUCOMA WITH VARIABLE PIGMENTATION OF TRABECULAR APPARATUS

Moscow VESTNIK OFTALMOLOGII in Russian Vol 102, No 5, Sep-Oct 86 (manuscript received 9 Sep 85) pp 17-20

[Article by N.G. Mamedov, candidate of medical sciences, and A.L. Shtilerman, Special Problems Scientific Research Laboratory for Ophthalmic Microsurgery, Chair of Eye Diseases, 2nd Moscow Medical Institute imeni N.I. Pirogov]

[Abstract] The therapeutic effectiveness of argon laser trabeculoplasty was evaluated in relation to the degree of pigmentation of the trabecular apparatus. The analysis involved 238 patients (295 eyes) with primary, uncompensated open-angle glaucoma and a mean age for the group of 62.6 years. The clinical results demonstrated unequivocally that success was dependent on the degree of pigmentation in the anterior chamber angle. Irrespective of the clinical stage of glaucoma, the laser procedure was most effective in cases with moderate pigmentation, and least promising in patients with no pigmentation or hyperpigmentation. Tabulated data are provided that relate clinical stage, degree of pigmentation, and laser efficacy. References 11: 2 Russian, 9 Western.

12172/9835
CSO: 1840/132

UDC: 599.745:591.41

MORPHOLOGIC STUDIES OF ARTERIAL SYSTEM OF PINNIPEDIA

Moscow ZOOLOGICHESKIY ZHURNAL in Russian Vol 65, No 9, Sep 86
(manuscript received 8 Apr 85) pp 1400-1410

[Article by Ye.I. Sobolevskiy, Pacific Ocean Scientific Research Institute of Fishing and Oceanography, Vladivostok]

[Abstract] Materials were collected during scientific research cruises to study the biology of the pinnipedia in the Far Eastern Seas and the Northwestern Pacific in 1969-1979. In all, 780 seals of 7 species were studied. The branching scheme of the major arteries in the pinnipedia was found to have much in common. The branching schemes are illustrated and described. Age and individual variability of artery diameter is noted. Reliable differences were found among seals in the Sea of Okhotsk population. Figures 5; references 18: 11 Russian, 7 Western.

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MEDICINE

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COMPARATIVE THERAPEUTIC TRIALS WITH DIFFERENT ULTRASONIC MODALITIES IN GLAUCOMA SURGERY

Moscow VESTNIK OFTALMOLOGII in Russian Vol 102, No 5, Sep-Oct 86 (manuscript received 10 Jan 86) pp 35-39

[Article by G.I. Dolzhich and G.G. Goryun, candidates of medical sciences, No 1 Chair of Eye Diseases and Chair of Histology and Embryology, Rostov Medical Institute]

[Abstract] Histological comparison was conducted on the results of performing sinusotrabeculotomy in the management of glaucoma with different ultrasonic modalities. In addition to the standard surgery performed with longitudinal waves, the procedure was also carried out with waves transformed via a coiled waveguide into circular and longitudinocircular emissions, with the circular vector predominating in the latter case (44 kHz, 15 μm). Studies on rabbits demonstrate the clinical advantage of the circular modality in comparison with standard longitudinal ultrasound currently employed. The circular shear waves were more sparing of the tissues, produced a cleaner channel, generated less inflammatory response, and produced smoothly sectioned collagen fibers that assured patency of the opening. Figures 4; references 6 (Russian).

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INDICATIONS FOR CORTICOSTEROIDS IN CHEMICAL EYE BURNS

Moscow VESTNIK OFTALMOLOGII in Russian Vol 102, No 5, Sep-Oct 86 (manuscript received 14 Nov 85) pp 50-55

[Article by H.G. Struck, C. Kirmsse and M. Tost, Clinic and Polyclinic of Eye Diseases, Medical Faculty, Martin Luther University, Halle-Wittenberg, GDR]

[Abstract] Experimental trials were conducted on rabbits to ascertain the efficacy of corticosteroids as anti-inflammatory agents in the treatment of chemical eye burns. The experimental model consisted of corneal burn induced by application of rynervol [sic] (topical antirheumatic, pH 8.0-9.5) and treatment with 0.1% drops of dexamethasone (5x/day) and antibiotics). Histologic monitoring at time intervals from 5 min to 35 days demonstrated that the use of dexamethasone was beneficial in 2nd-degree burns, as well as in the initial stages of 3rd-degree burns, in preventing or limiting scarring, in conjunction with other standard therapeutic measures (immediate irrigation, debridement, enzyme inhibitors, etc.). The adverse effects of corticosteroids in limiting epithelial regeneration and collagen synthesis may be overcome by appropriate chemotherapy. However, corticosteroids are contraindicated in severe burns with extensive necrosis where primary concern is for preservation of the eyeball rather than vision retention. The effects of dexamethasone were similarly-encouraging in the treatment of 40 patients, with details to be published at a later date. Figures 5; references 13: 2 Russian, 11 Western.

12172/9835
CSO: 1840/132

UDC 616-005.6-036.11-092.9-085.362.115.12

EXPERIMENTAL THERAPY OF ACUTE THROMBOSIS BY TISSUE ACTIVATOR OF PLASMINOGEN

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTALNAYA TERAPIYA in Russian No 4, Jul-Aug 85 (manuscript received 9 Feb 84) pp 61-64

[Article by I.K. Paradeyeva, S.N. Osipov, V.I. Rugal and V.N. Shabalin, Scientific Research Institute of Hematology and Blood Transfusion, RSFSR Ministry of Health, Leningrad]

[Abstract] Fibrinolytic preparations are used in conservative treatment of thromboembolism. Allogenic activators are of special interest since they cause no immunologic conflict. Tissue activator of plasminogen was isolated from fetal human renal tissue. By its properties it resembled more than any other agent the urokinase; its thrombolytic action was investigated on male dogs. It was shown that total recanalization of their

vessels was achieved after application of the activator in the dogs with vessels blocked due to experimental thrombosis. Figures 2; references 5: 4 Russian, 1 Western.

7813/9835
CSO: 1840/158

UDC 616.72-089:611-018.36

XENOGENIC SYNOVIAL FLUID THERAPY OF HUMAN ARTHROSES

Kiev VISNYK AKADEMII NAUK UKRAYINSKOYI RSR in Ukrainian No 10, Oct 86 pp 30-36

[Article by S.F. Manziy, doctor of biological sciences, I.V. Shumada, doctor of medical sciences, A.G. Berezkin, candidate of biological sciences, Ye.P. Pashkov and V.M. Krivenko, candidates of medical sciences, and N.A. Naumenko]

[Abstract] Therapeutic trials were conducted with synovial fluid replacement therapy in cases of experimental synovectomy in rabbits. The data showed that injection of 0.5 ml of bovine synovial fluid at 2 day intervals, beginning with the 8th post-operative day, for a month was beneficial in promoting regeneration of the synovial membrane and in preventing formation of adhesions. Preliminary clinical trials at an orthopedic clinic have also been promising. Cattle have been identified as the best xenogenic source of the synovial fluid, yielding 10-12 ml from the knee and foot joints. Sodium citrate was identified as the optimal agent for the preservation of the bovine synovial fluid (0.005 ml of 5% sodium citrate/1 ml of synovial fluid). References 25: 2 Ukrainian, 13 Russian, 10 Western.

12172/9835
CSO: 1840/146

UDC 578.833.1.083.24

ULTRAFILTRATION AND GEL FILTRATION IN PURIFICATION AND CONCENTRATION OF VENEZUELAN EQUINE ENCEPHALOMYELITIS (VEE) VIRUS

Moscow VOPROSY VIRUSOLOGII in Russian Vol 30, No 5, Sep-Oct 85 (manuscript received 3 Jan 85) pp 561-567

[Article by S.Yu. Klyushnik, B.V. Mchedlishvili, V.E. Berezin, L.M. Selimova, V.M. Zaydes, S.Ya. Gaydamovich and V.M. Zhdanov, Institute of Virology imeni D.I. Ivanovskiy, USSR Academy of Medical Sciences; Institute of Crystallography imeni A.V. Shubnikov, USSR Academy of Sciences, Moscow]

[Abstract] A method has been devised for the relatively rapid and simple purification and concentration of VEE virus, relying on sequential ultrafiltration and gel filtration. VEE virus grown in chick embryo tissue culture was subjected to two-step ultrafiltration via a 'nuclear pore' [sic] filter with 1.64-1.8 μm diameter pores for removal of large-particle admixtures, and then through a 0.05-0.07 μm filter which yielded a 30- to 40-fold concentration of the viral solution without any loss of biological activity. The final stage consisted of column chromatography on macroporous silica with 0.19-0.21 μm pores, treated with a copolymer of N-vinyl pyrrolidone and dimethacrylate. The latter stage provided 100-fold purification (in terms of protein) and a virus yield of 40%. In case of need, additional purification (ca. 1000-fold) could be attained either via further gel filtration or ultracentifugation, but with loss of ca. 60% of the residual virus. Figures 4; references 8: 6 Russian, 2 Western.

12172/9835
CSO: 1840/175

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PATHOGENICITY OF LASSA FEVER VIRUS FOR LABORATORY MICE

Moscow VOPROSY VIRUSOLOGII in Russian Vol 30, No 5, Sep-Oct 85
(manuscript received 13 Aug 84) pp 595-599

[Article by I.S. Lukashevich, S.V. Orlova, R.F. Maryankova and N.D. Barkar, Belorussian Scientific Research Institute of Epidemiology and Microbiology, Belorussian SSR Ministry of Health, Minsk]

[Abstract] A comparative study was conducted on the pathogenicity of Lassa fever virus (LFV) in several inbred lines of mice, to fill a gap on such information in the case of a widely used laboratory animal species. Evaluation of the mortality statistics demonstrated that intracerebral inoculation was entirely innocuous for neonatal mice, whereas 3 to 4 week old mice were most susceptible. The mortality rate was 100% for C3H/Sn mice, 30% for AKR mice, and 60% for C57BL/6. BALB/C mice showed complete resistance. Inoculation of LFV enriched with defective interfering particles followed by superinfection with the standard virus resulted in a prolonged incubation period and a diminished mortality rate of the C3H/Sn mice to zero. The protective effects of the defective particles was ascribed to autointerference, a phenomenon previously reported in tissue culture studies. References 23: 5 Russian, 18 Western.

12172/9835
CSO: 1840/175

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ACCUMULATION OF METAL-CONTAINING SUBSTRATES BY BIODEGRADING FUNGI

Leningrad MIKOLOGIYA I FITOPATOLOGIYA in Russian Vol 20, No 4, Jul-Aug 86
(manuscript received 22 Oct 84) pp 277-281

[Article by V.I. Bilay, L.P. Sidorenko and E.Z. Koval, Institute of Microbiology and Virology imeni D.K. Zabolotnyy, Ukrainian SSR Academy of Sciences, Kiev]

[Abstract] Tabulated data are presented to summarize studies conducted on metal accumulation by a variety of fungi implicated in biodestruction of metal surfaces. The strains identified as tolerant of high metal concentrations (1.5-8.6 g/liter; Fe, Al, Ni, Cr, or Cu) were Aspergillus flavus, A. fumigatus, A. niger, Eurotium rubrum, Fusarium oxysporum, Penicillium cyclopium, P. fellutanum, P. funiculosum, P. tardum, Trichoderma viride, Trichothecium roseum and Verticillium terrestre. All strains were capable of both intracellular accumulation of metals and their compounds, as well as adsorption to the cell wall. The ability

to accumulate the metals appears to account for their tolerance of high metal concentrations, while their metabolic activities lead to biodegradation of the metal artifacts. Tables 3; references 34: 17 Russian, 17 Western.

12172/9835
CSO: 1840/129

UDC 579.8.017.6/.7:57.083.13

KINETIC REGULARITIES OF GROWTH AND METABOLISM OF THERMOPHILIC HYDROGEN-FORMING CULTURE

Moscow BIOTEKHNOLOGIYA in Russian No 3, May-Jun 86 (manuscript received 13 Nov 85) pp 16-23

[Article by V.I. Sklyar, Ye.Ye. Karyakina, D.Ya. Medman, Chan Din Toy, S.V. Kalyuzhnyy and S.D. Varfolomeyev, Moscow State University imeni M.V. Lomonosov]

[Abstract] A study of kinetic regularities of growth and metabolism of a new species of thermophilic bacteria, isolated from thermophilic sources in Kamchatka Peninsula is described and discussed. Selection of optimum conditions for its periodic and continuous cultivation is described and determination of the most important chemical reactions occurring in the process of its metabolism is discussed. The new bacteria's oxygen tolerance is its advantage over well-known thermophilic, saccharolytic, hydrogen-forming bacteria. It appears to have potential use for industrial purposes and for water biophotolysis. The presence of carbon monoxide had no effect on its metabolism or rate of growth. Figures 9; references 18: 6 Russian, 12 Western.

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UDC: 579.262.017.7

SOME SPECIFICS OF DEVELOPMENT AND BIOSYNTHETIC ACTIVITY OF MIXED MICROORGANISM CULTURE

Moscow MIKROBIOLOGIYA in Russian Vol 54, No 4, Jul-Aug 85 (manuscript received 14 Mar 84) pp 529-532

[Article by N.S. Landau, I.I. Milovanova and N.S. Yegorov, Moscow State University imeni M.V. Lomonosov]

[Abstract] A binary microbial association was previously produced in which the yield of fibrinolytic exoenzymes was increased with respect to a

monoculture of the producer, Nocardia minima. The associate which stimulated formation of the enzymes was Arthrobacter citreus. This article studies the dynamics of the development of the species in this model and the interrelationships which develop in the process of joint culture growth. The increase in synthesis of exoproteases in the mixed culture was found to be caused by a polysaccharide secreted by the arthrobacter into the common medium. The polysaccharide has a bioregulatory effect on the synthesis of enzymes by the producer. Figures 6; references 11: 9 Russian, 2 Western.

6508/9835
CSO: 1840/086

UDC: 579.222

MICROBIOLOGICAL FORMATION OF METHANE FROM HEXADECANE

Moscow MIKROBIOLOGIYA in Russian Vol 54, No 4, Jul-Aug 85
(manuscript received 18 Jan 84) pp 555-559

[Article by Ye.P. Rozanova, T.N. Nazina, Ye.S. Kulik and Yu.P. Somov, Institute of Microbiology, USSR Academy of Sciences, Moscow; All-Union Scientific Research Institute of Petroleum and Gas]

[Abstract] The authors suggest the concept of contemporary formation of methane in subterranean water in sedimentary deposits rich in petroleum. Results are presented from laboratory experiments on the production of methane from hexadecane in a 2-stage microbiological process. The first stage is conducted in a porous medium modelling an oil stratum. Methane accumulated at 130 μl per ml of culture containing hydrocarbon-oxidizing bacteria. The syntropic conversion of higher fatty acids is said to be more productive than β oxidation to acetate by hydrocarbon-oxidizing bacteria for the accumulation of methane. The reality of contemporary methanogenesis in oil strata is confirmed by the results of direct measurement of methane production intensity in specimens of stratal water. References 16: 14 Russian, 2 Western.

6508/9835
CSO: 1840/086

UDC: 550.72:579.844.91.04:661.185.4

INFLUENCE OF NONIONOGENIC SURFACTANTS ON SULFATE REDUCTION

Moscow MIKROBIOLOGIYA in Russian Vol 54, No 4, Jul-Aug 85
(manuscript received 16 Dec 83) pp 563-565

[Article by R.Kh. Khazipov and I.B. Rezyapova, Bashkir State Scientific Research and Planning Institute of the Petroleum Industry, Ufa]

[Abstract] When productive oil strata are flooded, sulfate-reducing bacteria facilitate the corrosion of metal equipment. The purpose of the present work was an experimental study of the influence of nonionogenic surfactants on these sulfate-reducing bacteria. Experiments involved a culture of Desulfovibrio desulfuricans strain DV-2198 plus cultures of a sulfate-reducing bacteria taken from oil deposits. The growth of the sulfate-reducing bacteria on nutrient media containing various surfactants indicated an increase in sulfate-reducing capacity of the bacteria in the presence of all of the surfactants studied. The studies indicate that these nonionogenic surfactants stimulate the sulfate-reduction of the bacteria upon direct contact over a period of 7 to 15 days. Figures 2; references 8 (Russian).

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CSO: 1840/086

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KINETICS OF GROWTH AND DEVELOPMENT OF BACILLUS THURINGIENSIS UPON PERIODIC CULTIVATION

Moscow MIKROBIOLOGIYA in Russian Vol 54, No 4, Jul-Aug 85
(manuscript received 30 Jan 84) pp 604-609

[Article by Z.V. Sakharova, Yu.N. Ignatenko, F. Shchults, M.P. Khovrychev and I.L. Rabotnova, Institute of Microbiology, USSR Academy of Sciences, Moscow]

[Abstract] The purpose of this work was a detailed study of the kinetics of the growth and development of B. thuringiensis with glucose growth limitation. Detailed study of the growth kinetics and spore formation and the formation of protein toxin crystals, which is related to spore formation, is important for the development of a method of controlled cultivation of B. thuringiensis. The material inoculated was cells from the logarithmic growth phase, allowing elimination of the spore germination phase. The entire cycle of development of the culture was arbitrarily divided into 5 phases: exponential growth, slowing of growth and transition to steady phase, intensive formation of visible crystals, spores and lysis of sporangia and liberation of spores. Complex growth and development

kinetics were found to be characteristic for B. thuringiensis, as a result of the specifics of the metabolism of the cells. Optimization of the spore formation process requires sequential provision of elements of nutrition, particularly amino acids, followed by glucose. Figures 5; references 11: 8 Russian, 3 Western.

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CSO: 1840/086

UDC: 579.841.11-252.5

STABILITY OF NPL-1 AND NPL-41 NAPHTHALENE BIODEGRADATION PLASMIDS IN POPULATIONS OF PSEUDOMONAS PUTIDA UNDER CONTINUOUS CULTIVATION CONDITIONS

Moscow MIKROBIOLOGIYA in Russian Vol 54, No 4, Jul-Aug 85
(manuscript received 11 Oct 84) pp 610-615

[Article by A.M. Boronin, A.Ye. Filonov, V.V. Balakshina and A.N. Kulakova, Institute of Biochemistry and Physiology of Microorganisms, USSR Academy of Sciences, Pushchino]

[Abstract] The purpose of this work was a study of the stability of NPL-1 and NPL-41 biodegradation plasmids, controlling the synthesis of enzymes which determine the oxidation of naphthalene to salicylate in the cells of pseudomonas putida under continuous cultivation conditions with limitation by glucose and salicylate under chemostatic conditions, and without limitation of these substrates under pH-static conditions. The NPL-1 plasmid maintained stable in the population over a period of 100 generations of continuous cultivation without glucose limitation. With glucose limitation, plasmid NPL-7 remained constant for 100 generations. With salicylate limitation, the population of Nah^+ bacteria dropped rapidly. The degree of stability of plasmids in the bacterial population was found to depend on the stability of plasmids in the bacterial cell and the intensity of selective pressure favoring plasmid-containing or plasmid-less cells. The plasmid NPL-1, which controls inducible naphthalene oxygenase synthesis, is stable when P. putida is cultivated on glucose, when the naphthalene degradation genes of this plasmid are not expressed. However, when cultivated on salicylate, a naphthalene oxygenase synthesis inducer, the excess energy and metabolic costs result in instability of the plasma, that is, appearance, in the population, of cells containing the deletion variants of the plasmid. Instability of the plasmid NPL-41 controlling constitutive synthesis of naphthalene oxygenase when cultivated on glucose also apparently results from the energy and metabolic costs to the bacteria containing the plasmid. Figures 5; references 13: 5 Russian, 8 Western.

6508/9835
CSO: 1840/086

UDC: 579:841.31-253.4.04:535-31

EFFECTIVENESS OF CLOVER NODULE BACTERIA MUTANTS PRODUCED WITH REPEATED ULTRA VIOLET RADIATION

Moscow MIKROBIOLOGIYA in Russian Vol 54, No 4, Jul-Aug 85
(manuscript received 14 Nov 83) pp 651-655

[Article by E.B. Lapinskas, Vezhaychskiy Affiliate, Scientific Research Institute of Agriculture]

[Abstract] The purpose of this work was the production of clover nodule bacteria mutants with increased effectiveness, and determination of the optimal doses and repetitions of ultra violet radiation to produce mutants of increased effectiveness. The two most effective strains of nodule bacteria, 329b and R99, were exposed to UV radiation produced by a UV lamp. Mutants were preliminarily selected by morphologic characteristics of colonies and dehydrogenase activity when exposed to 2,3,5-triphenyl tetrazolium chloride. Three doses of UV radiation were used to produce the mutants, ranging from 200 to 1200 erg/mm^2. The effective mutants were studied under field conditions, yielding harvest increases of 2.8 to 8.3 cw/ha. The most effective mutant was 8 RM5, produced by 8-times irradiation at 200 erg/mm^2 · sec. References 16; 13 Russian, 3 Western.

6508/9835
CSO: 1840/086

UDC: 579.846.21.017.7:546.72

KINETICS OF OXIDATION OF Fe^{2+} BY CULTURE OF THIOBACILLUS FERROOXIDANS IN SOLUTIONS OBTAINED BY BACTERIAL LEACHING OF ARSENIC-CONTAINING CONCENTRATES

Moscow MIKROBIOLOGIYA in Russian Vol 54, No 4, Jul-Aug 85
(manuscript received 15 May 84) pp 675-678

[Article by N.G. Koreshkov, V.V. Panin, T.O. Skakun, G.I. Karavaiko, E.V. Adamov and S.I. Polkin, Moscow Institute of Steel and Alloys; Institute of Microbiology, USSR Academy of Sciences]

[Abstract] The purpose of this work was to study the combined influence of various concentrations of thiobacillus ferrooxidans, obtained from process solutions, and an Fe^{2+} substrate on the rate of its bacterial oxidation. The culture of T. ferrooxidans used in the study had been adapted to high concentrations of iron and arsenic by long-term cultivation. Solutions containing from 0.6 to 60.0 g/l bacteria were used in the studies. Bacterial oxidation of Fe^{2+} was found to begin immediately, without a lag phase, then decrease in intensity as the substrate was consumed. An equation is presented for calculation of the variation of maximum bacterial oxidation rate as a function of bacterial concentration. Bacterial oxidation

can be limited both by concentration of the substrate and by the quantity of bacteria. High oxidation rates require high concentration of substrate and over 4.0 g/l concentration of biomass. Figures 5; references 2 (Russian).

6508/9835
CSO: 1840/086

UDC: 579.852.11-253

SOME BIOLOGICAL SPECIFICS OF VARIANCE OF BACILLUS THURINGIENSIS SUBSP. GALLERIAE FORMED UNDER CONTINUOUS CULTIVATION

Moscow MIKROBIOLOGIYA in Russian Vol 54, No 4, Jul-Aug 85
(manuscript received 6 Nov 84) pp 683-684

[Article by T.P. Blokhina, Ya.I. Rautenshteyn, Z.V. Sakharova, I.L. Rabotnova and R.A. Zavoyskaya, Institute of Microbiology, USSR Academy of Sciences, Moscow; All-Union Scientific Research Institute of Microbiological Means of Plant Protection and Bacterial Preparations]

[Abstract] It has been previously shown that under continuous cultivation conditions, the initial R form of Bacillus thuringiensis subsp. galleriae can easily produce an S-variant, the quantity of which greatly increases and may reach 99% of the cells present. This does not occur under periodic cultivation. The purpose of this work was a comparative study of some of the biological properties arising in a chemostat containing the R and S variants. A study of the sensitivity of the chemostatic S and R variants to various phages reveals some differences. All 80 S variants studied were resistant to the phages 69-6x and 17 Rx as well as the virulent phage obtained from an initial 69-6 culture under the influence of vancomycin. All chemostatic variants and the initial R culture were sensitive to all four phages tested. Among the S chemostatic forms were strains in which the number of spore forming cells was 60-80%. Some of the S chemostatic forms could be of scientific and practical interest. References 3 (Russian).

6508/9835
CSO: 1840/086

UDC 616-005.-1-001.36.-07.616.24-008.43/.44

RESPIRATORY PATTERNS IN HEMORRHAGIC SHOCK

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTALNAYA TERAPIYA
in Russian No 2, Mar-Apr 85 (manuscript received 28 Sep 84) pp 52-55

[Article by O.S. Nasonkin, I.B. Voronov, A.A. Budko, N.I. Rukoyatkina and A.L. Zimin, Shock and Terminal State Laboratory, Military Medical Academy imeni S.M. Kirov; Pharmacology Laboratory, Institute of Evolutionary Physiology and Biochemistry imeni I.M. Sechenov, USSR Academy of Sciences, Leningrad]

[Abstract] An analysis was conducted on the respiratory pattern in cats subjected to hemorrhagic shock, with temporal monitoring of the minute volume, respiratory rate, duration of inspiration and expiration, and the 'respiratory rhythm intensity index' and the 'respiratory stability index' as the BP dropped from 143 $\pm$ 21 to 30 mmHg. As the BP fell from the baseline value to 60 mmHg the minute volume increased and the inspiration and the expiration times decreased. The fraction of the respiratory cycle due to the inspiratory time remained essentially constant (42.4%) in that time sequence. In the terminal stage, i.e., BP of 40-30 mmHg, with falling values of the minute volume and a concomitant increase in the inspiratory and expiratory times, the inspiratory component of the respiratory cycle decreased, as did the respiratory stability and rhythm intensity indices. The latter two parameters, increasing in the initial stages of hemorrhage and decreasing with the onset of irreversible shock, appear to be particularly valuable in terms of prognostic significance. References 8: 7 Russian, 1 Western.

12172/9835
CSO: 1840/157

UDC 616-005.1-06:613.863-02:612.766.2]-07:616.-008.1-07

REGIONAL CHANGES IN CIRCULATION FOLLOWING MASSIVE HEMORRHAGE IN COMBINATION WITH IMMOBILIZATION

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTALNAYA TERAPIYA in Russian No 2, Mar-Apr 85 (manuscript received 8 Dec 83) pp 15-18

[Article by O.A. Kovalev, S.K. Sheremetevskaya and M.V. Protasov, Central Scientific Research Laboratory, Leningrad Institute for Advanced Training of Physicians, imeni S.M. Kirov]

[Abstract] Regional changes in circulatory patterns were evaluated in male, outbred rats subjected to 1 h of immobilization followed by a 7-12 min period of hemorrhage sufficient to induce a 40% blood loss. Massive hemorrhage sufficient to induce a 40% blood loss. Massive hemorrhage, against a background of immobilization, led to an increase in the amount of the cardiac output directed into the cerebral, coronary and bronchial system, whereas a reduction of the blood flow was noted in extensive areas of the skin, muscles, bony tissues, and abdominal organs. These early changes were in accordance with those observed in hemorrhagic shock. However, ^{86}RbCl distribution studies demonstrated that with prolonged hemorrhagic hypotension (20 min) the portion of the cardiac output directed to the liver, adrenals, pancreas and the spleen did not diminish. The latter observations were ascribed to thepossibility that vasoconstrictive mechanisms of the resistance vessels in these organs and tissues showed fatigue to a greater extent than those of the musculoskeletal, intestinal and renal systems on prolonged hypotension, as well as to enhanced transcapillary exchange. References 12: 7 Russian, 5 Western.

12172/9835
CSO: 1840/157

UDC 617-001.17-06:617-001.28]-07;616.153:577.112.853]-074

EFFECTS OF BURNS AND RADIOTHERMAL INJURIES ON SERUM FIBRONECTIN LEVELS AND RES CLEARANCE

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTALNAYA TERAPIYA in Russian No 2, Mar-Apr 85 (manuscript received 21 Feb 84) pp 27-29

[Article by R.S. Budagov, A.V. Konov, V.N. Petrov, V.K. Podgorodnichenko and L.N. Chureyeva, Laboratory for Modeling Radiation and Nonradiation Effects, Department of Radiation Biochemistry, Scientific Research Institute of Medical Radiology, USSR Academy of Medical Sciences, Obninsk]

[Abstract] Male Wistar rats were employed in a study designed to assess the effects of burns and combination of burns and radiation injury on the function of the RES and serum fibronectin concentration. Animals subjected

to 3rd degree burns (IIIb; 15% body surface area) from a quartz halogen lamp presented with depressed RES uptake of gelatinized India ink administered intravenously to a statistically significant degree 3 h after the insult. Concomitantly, serum fibronectin levels were depressed to ca. 60% of the baseline value. Within the following 1-3 days clearance function recovered to baseline parameters, and actually exceeded baseline values 5-7 days after the thermal insult. Fibronectin values returned to baseline levels within 24 h, and showed a moderate excess in the 3-7 day period. Animals subjected to the combination of the thermal insult and gamma irradiation in a 7.5 Gy dose (5 mGy/sec) presented with more pronounced depression of clearance after 3 h, and reduction in fibronectin to 70.5% below baseline level. Both physiological parameters approached or exceeded baseline levels after 1 day, and exceeded the baseline by day 3. However, after 3 days RES clearance again diminished without a concomitant decrease in serum fibronectin. The role of fibronectin in opsonization and phagocytosis in relation to RES clearance requires further research in order to account for the observed temporal uncoupling. Figures 11; references 15: 4 Russian, 11 Western.

12172/9835
CSO: 1840/157

UDC 578.891;578.74].083.3

EXPRESSION OF HBsAg GENE CONTROLLED BY GENE PHO5 PROMOTER IN YEAST CELLS

Moscow VOPROSY VIRUSOLOGII in Russian Vol 30, No 5, Sep-Oct 85
(manuscript received 7 Feb 85) pp 558-561

[Article by N.N. Granovskiy, V.M. Zhdanov and M.N. Smirnov, Institute of Virology imeni D.I. Ivanovskiy, USSR Academy of Medical Sciences, Moscow]

[Abstract] Standard techniques of genetic engineering were employed for the construction of a hybrid plasmid in which the promotor region of the Saccharomyces cerevisiae PHO5 gene was joined via SalGI linker to the HBs genome, the latter retaining its ATG initiation codon. The hybrid plasmid, designated pVGNM20, was used to transform S. cerevisiae cells. The cells were initially grown in a medium with a high phosphorus concentration, and then transferred for further growth in a low-phosphorus medium. The resultant biomass was disintegrated mechanically, and the clarified extracts analyzed for HBsAG by radioimmunoassay, passive hemagglutination, and immunoelectrophoresis. The yeast-produced antigen gave complete cross-reactivity with the antigen isolated from human material, and was synthesized in yields representing 0.02-0.05% of the total soluble yeast protein. References 18 (Western).

12172/9835
CSO: 1840/175

NIEMR

UDC 577.32

ABSORPTION BY DNA SOLUTIONS IN 9-12 GHz RANGE

Kiev BIOPOLIMERY I KLETKA in Russian Vol 2, No 1, Jan-Feb 86
(manuscript received 4 Jun 85) pp 35-38

[Article by V.Ya. Maleyev, V.A. Kashpur, G.M. Glibitskiy, A.A. Krasnitskaya and Ye.V. Veretelnik, Institute of Radiophysics and Electronics, UkSSR Academy of Sciences, Kharkov]

[Abstract] A study of microwave absorption in the 9-12 GHz range by aqueous solutions of DNA isolated from chick erythrocytes and from E. coli for native macromolecules and DNAases, fragmented by ultrasound, revealed no greater microwave absorption than that seen in the solvent, in the 9-12 GHz range. Correct analysis of the dielectric properties of the solution require close consideration of the effect of the ions present.
References 9: 3 Russian, 6 Western.

2791/9835
CSO: 1840/063

UDC 617-001.17-001.36-07;616.16-008.1-02;612.273.2

EFFECTS OF ADAPTATION TO HIGH-ALTITUDE HYPOXIA ON MICROCIRCULATION IN RATS WITH EARLY STAGES ON BURN TRAUMA

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTALNAYA TERAPIYA in Russian No 2, Mar-Apr 85 (manuscript received 23 Mar 84) pp 30-32

[Article by Yu.M. Shtykhno (deceased) and Z.R. Atadzhanova, Laboratory of Pathophysiology of Extreme States, Scientific Research Institute of General Pathology and Pathological Physiology, USSR Academy of Medical Sciences, Moscow]

[Abstract] In order to define the role of microcirculation in the pathogenesis of burn shock, a comparative analysis was conducted on the state of mesenteric circulation in male Wistar rats adapted and unadapted to hypoxia following burn injuries. The experimental group was placeddin a pressure chamber set at 6500 m altitude for 5 h/day for 10 days, with both categories of animals subjected to a 4th degree burn (30 $\pm$ 5% body surface area) via a 45 sec alcohol flame (LD_{100}). Analysis of the rheologic characteristics and the acid-base status of the arterial blood in both groups of animals and microscopic examination of the mesentery 1 h after the insult revealed a much more serious clinical condition in the 'adapted' animals. Hypoxia-induced polycythemia and the attendant increase in blood viscosity, elevated hematocrit and Hb concentration combined to intensify vascular pathology. In the adapted animals, functional status of the true capillaries deteriorated with a prominent shift in the blood flow to dilated arteriovenous and arteriovenular anastomoses. Sluggish blood flow and frank stasis, resulting from intravascular aggregation of RBCs, in some cases gave rise to retrograde flow in venules and arterioles. Figures 1; references 11: 10 Russian, 1 Western.

12172/9835
CSO: 1840/157

UDC 617-001.17-008.6-06:616.831-092:616.153.96-008.6-092.9

EFFECTS OF MEDIUM MW PLASMA PEPTIDES FROM INTACT AND BURN-INJURED DOGS ON BLOOD-BRAIN PERMEABILITY IN MICE

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTALNAYA TERAPIYA in Russian No 2, Mar-Apr 85 (manuscript received 10 Oct 83) pp 36-40

[Article by B.M. Valdman, I.A. Volchegorskiy and R.I. Lifshits, Chair of Bioorganic and Biological Chemistry, Chelyabinsk Medical Institute]

[Abstract] Medium MW blood peptides have been previously demonstrated in burn studies to possess toxic effect, a fact that provided a basis for the present assessment of such plasma peptides on the permeability of the blood-brain barrier. The peptides were isolated from the plasma of intact dogs and dogs subjected to scalding over 15-20% of the body surface, and tested on CBA/57B1 mice injected intravenously with trypan blue. Peptide fractions 1-4 obtained from Sephadex G-15 columns, isolated from the experimental animals 12 h after the thermal insult, were twice as effective as the peptides isolated from the control dogs in increasing permeability and leading to convulsions and death of the mice. A dose-effect study with the peptides isolated from the experimental dogs yielded a parabolic plot, indicating that compensatory mechanisms came into effect following initial exposure to the peptides. The data also indicated that the physiological consequences of a burn injury involved the appearance of a novel peptide factor (or factors) localized in fraction 4 that, in doses as low as 16.7 µg/mouse, i.v., leads to convulsions. Figures 2; references 15: 11 Russian, 4 Western.

12172/9835
CSO: 1840/157

UDC 616.127-008.924.1-02;615.919:579.861.2]-092.9-07

EFFECT OF STAPHYLOCOCCAL TOXIN ON CALCIUM-TRANSPORTING SYSTEMS IN HEART MUSCLES

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTALNAYA TERAPIYA in Russian No 4, Jul-Aug 85 (manuscript received 31 Aug 84) pp 15-18

[Article by G.Ye. Brill, Department of Pathological Physiology (Director: Professor N.P. Chesnokova) Saratov Medical Institute]

[Abstract] Changes in reactivity of heart muscle towards various Ca^{2+} concentrations were studied on isolated strips of frog myocardium, on the backgroun of exposure to staphylococcal toxin. It was shown that this toxin increases the permeability of the sarcolemic membrane of myocardial cells towards Ca^{2+}. The reactivity of heart muscle is altered towards hypo- and hypercalcium solutions probably due to inhibition of intracellular enzyme systems responsible for removal of free Ca^{2+} ions from the

construction apparatus. When cellular calcium concentration is lowered, the reductive postactivation process in myocardial cells is accelerated due to the change in kinetics of Ca-tropanine complex dissociation. Figures 2; references 7: 1 Russian, 6 Western.

7813/9835
CSO: 1840/158

UDC 612.017.2-06:613.863]-08:612.015.1:577.152.34

EFFECT OF KALLIKREIN ON DEVELOPMENT OF GENERAL ADAPTATION SYNDROME

Moscow PATOLOGICHESKAYA FIZIOLOGIYA I EKSPERIMENTALNAYA TERAPIYA in Russian No 4, Jul-Aug 85 (manuscript received 26 Jan 84) pp 52-54

[Article by Yu.V. Kolenda, S.V. Vovchuk and A.P. Levitskiy, Municipal Hospital No 2, Odessa]

[Abstract] Recently it was shown that kallikreins (I) are capable of initiating physiological reactions directed at supporting homeostasis of an organism. Effect of I was studied on development of a general adaptive syndrome in Wistar rats exposed to stress caused by immobilization. When I was administered, all stress indices returned to normal: the number of leucocytes, eosinophiles and lymphocytes in peripheral blood plasma became normal, ulceration on the mucuous membrane of the stomach decreased, the concentration of corticosterone dropped and involution of thymus and hypertrophy of adrenals were prevented. One of the mechanisms responsible for this action of I could be based on its action on adrenal cortex; it is directed at lower production of glucocorticoids and increased synthesis of mineralocorticoids. References 14 (Russian).

7813/9835
CSO: 1840/158

UDC: 615.281:547.551.525.211:1:615.25.349

PHARMACOLOGIC ACTIVITY OF SALTS OF p-(1-ADAMANTYLOXAMIDOSULFONYL)-SUCCINANYLIC ACID AS A FUNCTION OF MEMBRANOTROPIC PROPERTIES

Moscow FARMATSIYA in Russian Vol 34, No 5, Sep-Oct 85
(manuscript received 17 Oct 84) pp 29-32

[Article by L.A. Porokhnyak, V.F. Konev, L.V. Ivanov, B.A. Rogozhin and Z.G. Yeremina, Kharkov Pharmaceutical Institute]

[Abstract] The purpose of this study was to reinforce the biological effect of p-(1-adamantyloxamidosulfonyl)-succinanylic acid by synthesis of salts from it. A preliminary estimate of the membranotropic properties of the substances was produced on model phospholipid membranes. The results of the studies showed that the inflammatory activity of salts of p-(1-adamantyloxamidosulfonyl)-succinanylic acid was lower than that of the acid itself. Introduction of various cations to the acid molecule increased diuretic activity. All compounds of this series characteristically have analgesic activity. The antihypoxic activity was equal to that of dibazol, and one of the salts obtained have high antihypoxic activity and moderate membranotropism. The compoud was found to have increased the survival rate and decreased the level of alanine amino transferase in carbon tetrachloride poisoning. The other substances had no hepatoprotective effect. The diuretic, antihypoxic and hepatoprotective activity of the compounds as studied was related more closely to the effects of the cation portion of the salt molecule, the antiinflammatory effect to the anion portion. Membranotropism can serve as a physical-chemical factor used in evaluating the manifestations of biological activity of this series of compounds. References 10 (Russian).

6508/9835
CSO: 1840/088

UDC: 615.214.22.033.07

KINETICS OF DECOMPOSITION OF PHENAZEPAM IN TABLETS

Moscow FARMATSIYA in Russian Vol 34, No 5, Sep-Oct 85
(manuscript received 30 Nov 84) pp 34-38

[Article by V.G. Belikov, T.N. Nesterova and Ye.V. Kompantseva,
Pyatigorsk Pharmaceutical Institute]

[Abstract] A study is presented of the chemical transformations occurring in phenazepam in tablets, upon storage, in order to develop methods for qualitative and quantitative analysis of the preparation in the presence of its decomposition product and determine the possibility of using kinetic characteristics for prediction of the shelf life of phenazepam in tablets. Previous studies on the inactivation of phenazepam, a derivative of 1,4-benzodiazepine, were not found in the literature. Specimens studied were 0.0005 g phenazepam tablets, some fresh, some older than the standard shelf life (2 years, 1 month). The substance was found to be highly resistant to oxidation by the air, to temperature and humidity. The kinetic characteristics of decomposition of phenazepam tablets were used to predict the true shelf life. The method of chromatic-spectrophotometric determination of phenazepam in model tablets was developed. The rate constants of decomposition of phenazepam at 20°C were determined. A linear variation was observed between the logarithm of concentration of the preparation and storage time, indicating decomposition to be a first order reaction with an activation energy of 17-21 kcal/mol. The calculated shelf-life was 3 years, 2 months at 20°C, 1 year, 11 months, at 25°C.
Figures 3; references 10: 5 Russian, 5 Western.

6508/9835
CSO: 1840/088

UDC 615.214:547.785.5].015.3.033.036.8

PHARMACOKINETICS AND CLINICAL EFFECT OF SINGLE DOSE OF BEMITIL

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 5, Sep-Oct 86
(manuscript received 25 Jun 85) pp 17-20

[Article by S.S. Boyko, Yu.G. Bobkov, G.G. Neznamov and T.V. Serebryakova,
Scientific Research Institute of Pharmacology USSR Academy of Medical Sciences, Department of Borderline Psychiatry, All-Union Scientific Research Institute of General and Forensic Psychiatry imeni V.P. Serbskiy, USSR Ministry of Health, Moscow]

[Abstract] A study of the pharmacokinetics of bemitil by gas chromatographic methods and examination of its clinical effect after one-time use in patients with borderline psycho-neurotic disturbances included 19 patients (9 men and 10 women, ranging in age from 19-50 years) with neuroses and neurosis-like

disturbances of traumatic and infectious genesis with predominance of asthenic symptoms without concomitant somatic pathology. Blood samples were taken from the ulnar vein before and after a 500 mg internal dose of bemitil. The drug was absorbed quickly into the blood stream from the gastro-intestinal tract with a mean period of half-intake of 45 minutes after ingestion. Elimination of the drug was 2-phase in most patients: within 2 hours, the uptake phase changes to a phase of rapid decrease of drug concentration in the blood. This phase lasts 4-6 hours and is followed by a phase of slow decrease of concentration of the drug in the blood. There were many individual differences among the patients. Patients were placed in one of two groups according to the clinical effect of bemitil. Group I members displayed an obvious psychostimulating response while group II patients experienced a tranquilizing effect from the drug. The drug had little effect on personal anxiety. Group I patients showed a higher degree and rate of intake of the drug, a higher peak concentration of the drug and a more pronounced phase of distribution and elimination of bemitil than group II patients. Figures 2; references 4 (Russian).

2791/9835
CSO: 1840/044

UDC 615.214.025.4

GENERAL REGULARITIES OF ACTION OF PSYCHOTROPIC DRUGS

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 5, Sep-Oct 86 (manuscript received 17 Feb 86) pp 45-50

[Article by N.N. Karkishchenko, Department of Pharmacology and Clinical Pharmacology of Rostov Medical Institute]

[Abstract] A discussion of general regularities of the effect of psychotropic drugs included consideration of a new coneept, psychounitropism, which refers to the dose-dependent, unidirectional action of substances on the systemic activity of the brain and the related concept of the property of psychounitropicity which is inherent to all or many psychoactive compounds. The concept--assuming that psychounitropism characterizes the commonality of the influences of psychotropic drugs on the central nervous system at biochemical, electrophysiological and other levels of analysis of brain activity--is discussed and confirmed by experimental material presented and by references to sources in the literature. Means by which the concept of psychounitropism can be used to screen psychoactive agents and to improve individual drugs used in psychiatry and medicine are presented and discussed briefly. Figure 1; references 15: 8 Russian, 7 Western.

2791/9835
CSO: 1840/044

UDC 615.214.22.038.036.8

ASSESSMENT OF NOOTROPIC EFFECT OF MEBICAR IN CLINICAL PRACTICE

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 5, Sep-Oct 86 (manuscript received 17 Feb 86) pp 50-53

[Article by I.Ye. Zimakova, N.S. Makarchikov and A.M. Karpov, Clinical Pharmacology Course (head professor I.Ye. Zimakova), Kazan Institute for the Advanced Training of Physicians imeni V.I. Lenin]

[Abstract] Clinical assessment of the nootropic effects of mebicar on patients with disturbances of thought included 100 patients (70 men and 30 women, ranging in age from 19-55 years of age) with paranoid schizophrenia (50 persons) or neurosis and neurosis-like states of different etiology (50 persons). Each patient was tested before beginning mebicar treatment and 7-12 days after use of 0.6-1.2g doses of the drug three times a day. The effect of mebicar was compared with the effect of piracetam in doses from 0.8g-1.6g three times a day. Patients' thought processes were tested before and after treatment. Mebicar alleviated disturbances of thought in the patients with paranoid schizophrenia and improved mental efficiency and reduced inattentiveness and improved memory in patients with borderline states. The normalizing effect of mebicar on deficit thought disturbances indicated its nootropic effect in the spectrum of psychotropic activity. Its nootropic effect differs from that of piracetam. References 4 (Russian).

2791/9835
CSO: 1840/044

UDC 615.22:547.473.2'34].07

CARDIOTROPIC PROPERTIES OF LITHIUM OXYBUTYRATE IN EXPERIMENTAL AND CLINICAL STUDIES

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 5, Sep-Oct 86 (manuscript received 17 Feb 86) pp 63-67

[Article by P.A. Galenko-Yaroshevskiy, M.V. Pokrovskiy and V.V. Skibitskiy, Department of Pharmacology (head-professor P.A. Galenko-Yaroshevskiy), Kuban Medical Institute imeni Red Army, Krasnodar]

[Abstract] A detailed study of coronolytic and anti-anginal activity of lithium oxybutyrate and studies of its anti-arrythmic and anti-fibrillation properties involved experiments on 182 rats, 50 rabbits, 184 cats and 54 dogs (weight 0.21-0.29 kg, 2.4-3.5 kg, 2.9-3.7 kg and 12-16 kg respectively) and on 30 isolated cat hearts. The drug, injected intravenously (in a 30 percent solution) and taken into the stomach in tablet form in doses of 50, 100, 200 mg/kg, confirmed its value as an anti-anginal and anti-arrythmia drug. Lithium oxybutyrate (50-200 mg/kg) in both the solution

and in tablet form increased the volumetric rate of coronary blood flow and created an oxygen reserve in the myocardium. Lithium chloride (78.5 mg/kg) and sodium oxybutyrate (229 mg/kg) taken in equivalent doses produced a less pronounced effect. Coronolytic effect of lithium oxybutyrate is realized, to a large extent, via gamma amino butyric acid receptors. Lithium oxybutyrate (25-200 mg/kg) improved the functional state of the focus of ischemia, increased the threshold of vasomotor components of pain reactions, limited the infarction zone and produced an anti-fibrillation effect after reperfusion of the coronary artery and sodium ion deficit. It produced an anti-arrythmic effect after daily intramuscular doses of 1500 mg in persons with extrasystoles against a background of affective disturbances and ischemic heart disease. References 23: 20 Russian, 3 Western.

2791/9835
CSO: 1840/044

UDC 616.131-008.331.1-02:612.275.1]-085.225.2:546.175

EFFECT OF SHORT-TERM AND LONG-TERM ACTION OF NITRATES ON SOME INDICATORS OF HEMODYNAMICS IN PATIENTS WITH HIGH ALTITUDE PULMONARY HYPERTENSION

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 5, Sep-Oct 86 (manuscript received 17 Feb 86) pp 84-86

[Article by M.T. Nanayeva and D.T. Nusupova, Department of Pharmacology (head-professor M.T. Nanayeva), Kirghiz Medical Institute, Frunze]

[Abstract] A study of the effect of nitroglycerine and nitrong on some parameters of the hemodynamics in patients with high-elevation pulmonary hypertension included the use of nitroglycerine by 10 Taldy-Bulak natives (2200-2800m above sea level) ranging in age from 18-59 years and by 10 persons who had been at this elevation for a short time (a 0.5 mg sublingual dose) and the use of nitrong (2.6 mg orally 3 times a day for 2-3 weeks). The control group included 15 healthy mountain inhabitants (760m above sea level). Both nitroglycerine and nitrong improved the contractile capacity of the right ventricular myocardium and the pressure level in the lesser blood circulation. The effect was more pronounced in temporary inhabitants after a single dose of nitroglycerine and more pronounced in natives in a course of treatment with nitrong. References 5: 4 Russian, 1 Western.

2791/9835
CSO: 1840/044

UDC 615.225.2.017:615.224].015.4

ANTI-ANGINAL ACTION OF CORINFAR

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 5, Sep-Oct 86 (manuscript received 17 Feb 86) pp 90-92

[Article by R.M. Sadkovaya, T.M. Zinkovskaya and A.D. Golubev, Department of Internal Diseases No 2 (head-docent A.D. Golubev), Perm Medical Institute]

[Abstract] A study of the effect of corinfar on the dissociation capacity of oxyhemoglobin in treatment of ischemic heart disease included 18 patients with severe ischemic heart disease and 52 patients with a mild or average degree of the disease. The anamnesis of 25 patients included myocardial infarction and that of seven included repeated infarctions. Corinfar was prescribed in a 20 mg dose (2 tablets) 3 times a day. Some patients (5) with severe disease took 90 mg a day. The course of treatment lasted for 2 weeks. Corinfar (a Ca antagonist) produces an anti-anginal action by reducing the Ca^{2+} level in blood plasma, by reducing the tonus of the arterioles and their tendency toward coronary spasm and by decreasing dissociation of hemoglobin which improves myocardial oxygenation. Complete disappearance of angina attacks was noted in 37 patients, a good effect was noted in 30 patients and no effect was evident in 13 patients. A correlation between Ca^{2+} level decrease and drug efficiency was established. References 16: 5 Russian, 11 Western.

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EXPERIMENTAL CLINICAL STUDY OF EFFECT OF SENSITE ON CEREBRAL BLOOD FLOW AND STATE OF HEMOSTASIS IN CEREBRAL ISCHEMIAS

Moscow FARMAKOLOGIYA I TOKSIKOLOGIYA in Russian Vol 49, No 5, Sep-Oct 86 (manuscript received 17 Feb 86) pp 97-101

[Article by Ye.M. Burtsev, L.G. Miller, A.S. Gushin, V.V. Shprakh, V.S. Savkov, N.V. Verlan, T.V. Ruzhnikova and T.N. Kostyuk, Department of Neuropathology and Neurosurgery (head-professor Ye.M. Burtsev) Irkutsk Institute for Advanced Training of Physicians, Department of Pharmacology (head-professor L.A. Usov), Irkutsk Medical Institute]

[Abstract] An experimental and clinical study of the effect of sensite on cerebral blood flow and the state of hemostasis during cerebral ischemia included 48 narcotized cats, 60 unanesthesized rats and clinical tests of the effect of sensite on blood filling of the brain and the state of hemostasis performed on 65 patients with cerebral circulatory insufficiency caused by cerebral atherosclerosis, arterial hypertension or a combination

of these diseases. Most patients (43) ranged in age from 45-60 years. The drug was given orally (50 mg) 3 times per day. Sensite under normal conditions decreases the volumetric rate of cerebral blood flow and oxygen delivery to brain by reducing the tonus of the cerebral vessels. During transient cerebral ischemia, sensite prevents impairment of cerebral blood flow and reduction of oxygen tension in brain tissue. Prophylactic use of the drug after occlusion of the carotid artery prevented development of cerebral edema and death of the animals. Oral use of the drug in patients with chronic cerebral circulatory insufficiency increased the blood filling of the brain and produced hypocoagulation shifts in the hemostasis system. Thromboelastrophy showed that the drug causes some lessening of blood coagulability. Figures 2; references 10: 6 Russian, 4 Western.

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UDC 615.281:547.495.2/.4

N-GLYCOSIDES. Part 5. 3-GLYCOSYL-4-HYDROOXYGEXAHYDROPYRIMIDINE-2-THIONES AND THEIR ACRYLIC PRECURSORS--GLYCOSYLTHIOUREAS AS STIMULANTS OF NON-SPECIFIC RESISTANCE TO INFECTION

Moscow KHIMIKO-FARMASEVTICHESKIY ZHURNAL in Russian Vol 19, No 12, Dec 85 (manuscript received 22 Nov 84) pp 1447-1453

[Article by L.A. Ignatova, A.D. Shutalev, B.V. Unkovskiy, N.G. Sinilova and A.P. Duplishcheva, Institute of Fine Chemical Technology imeni M.I. Lomonosov, Institute of Epidemiology and Microbiology imeni N.F. Gamaleya, USSR Academy of Medical Sciences, Moscow]

[Abstract] A study of the effect of some glycosylthioureas and 3-glycosyl-4-hydroxyhexahydropyrimidine-2-thiones as stimulators of non-specific resistance to infection is described and discussed. Immuno-stimulating action of the preparations was assessed by the change of resistance of the organism to infection and by the effect on tetanus cells. Mongrel white mice and CBA mice (18-20 g males) (30 mice in each group) were injected intraperitoneally with 100 µg or 500 µg doses in the form of aqueous solutions. All studied compounds produced some resistance-stimulating effect (indices of resistanee 2-6). Difference in the carbohydrate component of the molecules (glucose, galactose, ribose) had no significant effect on the level of stimulation of these substances. The nature of the aglycon did not change the effectiveness of the preparations. A larger dose (500 µg) increases the stimulating effect 1.5-2-fold. All of the compounds stimulated non-specific resistance of the mice to typhoid fever injection and also to endogeneous and exogeneous colony-formation in spleens of lethally-irradiated mice. Their effectiveness is approximately the same as that of synthesized compounds such as taftsin, rigin and levamisol, well-known immunostimulators. The stimulating effect of the preparations was assumed to be due to intensification of proliferative processes in

lymphoid and hematopoietic tissues. References 20: 9 Russian, 11 Western.

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UDC 615.451.13.014.45:615.849.1

POSSIBILITY OF RADIATION STERILIZATION AND PASTEURIZATION OF SOLUTIONS OF SOME MEDICINES AND COMPONENTS OF INJECTION SOLUTIONS

Moscow KHIMIKO-FARMASEVTICHESKIY ZHURNAL in Russian Vol 19, No 12, Dec 85 (manuscript received 2 Apr 85) pp 1472-1478

[Article by S.A. Safarov, Institute of Biophysics, USSR Ministry of Health, Moscow]

[Abstract] Possibilities of radiation sterilization and methods of determining the composition and quality of more than 30 irradiated solutions of medicine and injection solutions are described and discussed. Samples were sterilized by gamma-irradiation of cobalt-60 in neutral glass sealed ampules, flasks with inert corks and sealed polyethylene flasks in the presence of air. Power of radiation dose was changed from 0.3-2 Gr/s. The radiation dose which produced a sterilizing effect regardless of the composition of the medicines or the degree and kind of microbial contamination equalled 25 kGr. Radiation did not change the level nor physical chemical properties of the preparations. The possibility of sterilization and pasteurization of the preparations studied was confirmed by the experiment. References 12: 10 Russian, 2 Western.

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UDC 615.456.014.83.07

METHOD OF CONTROL OF AMPULED INJECTION SOLUTIONS

Moscow KHIMIKO-FARMASEVTICHESKIY ZHURNAL in Russian Vol 19, No 12, Dec 85 (manuscript received 29 Mar 83) pp 1489-1494

[Article by V.D. Viktorov, V.B. Denezhkin, V.I. Yevstratov, G.S. Orlov and N.A. Filipin, Leningrad Scientific Production Association "Progress"]

[Abstract] A method of control of the purity of an injection solution while filling an ampule from the bottom to the meniscus is based on automatic control devices which make possible simultaneous control of long containers of different capacity with the use of photo-receivers with geometric dimensions

which are much smaller than the height of filling of the containers. The device is illustrated and described and the design of the optical unit is discussed. Figures 5; references 6: 4 Russian, 2 Western.

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UDC 615.384:615.453.2].012

PERORAL MEDICINAL FORMS OF LOW-MOLECULAR WEIGHT POLYVINYLPYRROLIDONE

Moscow FARMATSIYA in Russian No 6, Nov-Dec 85 pp 22-25

[Article by O.V. Ber, M.T. Alyushin, M.M. Astrakhanova, M.L. Yezerskiy, V.V. Suzdaleva, A.A. Kiseleva and N.L. Makarova, Branch for Development of Finished Drugs, All-Union Scientific Research Institute of Pharmacy; Scientific Research Institute for Biological Testing of Chemical Compounds; Central Scientific Research Institute of Hematology and Blood Transfusions, Moscow]

[Abstract] This article reports on study of methods for creating stable peroral forms of low-molecular weight polyvinylpyrrolidine (PVP) in single-dose powder forms. Enterodese and enterosorb were prepared by introducing stabilizers, with stability assessed by infrared spectroscopy. Measurements included determination of optimal amounts of stabilizers, selection of the best packaging, and selection of optimal preservation methods. Results indicated that addition of 0.1-0.5% aerosol for enterodese and 1-3% for enterosorb provided the best preservation. Thermo-sealed PTs-2 film material gave the best packaging; limitation of relative humidity to 60% was necessary for storage in usable condition up to 2 years, either at room temperature or at 50°C. References 7 (Russian).

12131/9835
CSO: 1840/094

UDC 615.322:582.572.7:547.918].099.074+616-008.949.5:547.918]-074

ISOLATION AND ASSAY OF POLYSPONIN IN CHEMICAL TOXILOGICAL ANALYSIS

Moscow FARMATSIYA in Russian No 4, Jul-Aug 85 pp 47-51

[Article by G.B. Iskenderov, Azerbaijan Medical Institute imeni N. Narimanov]

[Abstract] Saponines and medications containing them that cause hemolysis of blood erithrocytes are of interest from the chemical toxicological standpoint. The present article reports on the effects of polysponin, which is used for its antisclerotic effects, on mucous membranes. The preparation

was obtained from the tubers and roots of Dioscogea nipponica Makino. Research included isolation, confirmation and assay of the substance itself and its effects in relation to various solvents, pH media, temperatures, repetitions and duration of steeping. The best solvent was found to be 70% ethanol, which provided the maximum polysponin recovery and minimum extraction from the biological material. Control of pH was also important to obtain a dependable product. Increasing the repetitions of steeping from 1 to 4 brought a correlative increase in recovery, from 28% to 42.2%; further steeping did not increase yield. The duration of steeping required was 24 hours. Further tests included study of hemolytic activity, foaming, reactions in sulfuric acid, microdrop reaction on paper, and chromatographic study of diosgenin. The research developed a dependable method for isolating polysponin from biological material permitting determination of up to 1 mg per 100 grams of the biological material. Experimental procedures are summarized. References 8 (Russian).

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CSO: 1840/092

UDC 614.27+615.12]:008(47+57)

USSR PHARMACY NETWORK TASKS

Moscow FARMATSIYA in Russian No 6, Nov-Dec 85 pp 1-9.

[Article by M. A. Klyuyev, USSR State Pharmacy and Pharmaceutical Administration, Ministry of Health, Moscow: "Tasks of the Pharmacy Service for Further Improvement of the Supply of Medicines to the Population and to Treatment and Prophylactic Institutions in the Light of the Decisions of the April, 1985 Plenum of the CPSU Central Committee"]

[Excerpts] The Communist Party and all the Soviet people are preparing for the 27th CPSU Congress--a most important event in the life of our country. Being guided by the decisions of the April and July, 1985 Plenums of the CPSU Central Committee, the collectives of enterprises, institutions, and organizations are evaluating the results accomplished after the 26th Party Congress and are noting the prospects for further development of the country. The Party is singling out and placing foremost in the total system of socialist problems, the improvement of national public health.

General Secretary of the CPSU Central Committee M. S. Gorbachev at the April, 1985 Plenum of the CPSU Central Committee stressed, "Such areas as public health and national education are assuming greater and greater significance in the life of society and every person, and this means also in the social policies of the party. We have achieved a great deal in their development and have provided equal access of all citizens to these vitally important benefits. But today new tasks arise here also.

"A material-technical base of public health, a quality medical service, and provision of medicines to the population are needed for a substantial improvement from the point of view of modern requirements." (Footnote 1) ("Materialy Plenuma Tsk KPSS" [Materials of the CPSU Central Committee Plenum,], Moscow, Politizdat, 1985, p 15)

During the years of the 11th Five-Year Plan, the pharmacy network in the country increased by almost 10 percent, and this contributed to the nearness of medicinal care for the population and a decrease in the number of inhabitants being served by one pharmacy. The establishment of a wide network of pharmacy dispensaries at polyclinics and feldsher-midwife dispensaries makes it possible for the patient to obtain the prescribed medicines immediately after attendance of a physician or paramedic. Mobile pharmacy

dispensaries which are in operation at all times have been organized to render medicinal care to the inhabitants of isolated and very small settlements and also to people employed in driving cattle.

In the period of the 10th Five-Year Plan and 4 years of the 11th Five-Year Plan, the areas of pharmacy warehouses expanded by more than 60 percent. In this period, great attention was paid also to the problem of providing pharmacy institutions with pharmacy personnel. Pharmacy dispensaries have been opened at medical institutions of higher learning in the KISSR, TaSSR, TuSSR, and in a number of medical institutes of the Russian Federation. Net specialists with a higher education are trained in all the Soviet republics. The number of pharmaceutical workers increased by a factor of almost 2 at the beginning of 1985 in comparison with 1976.

A number of organizational measures have been taken in the pharmacy system which are directed at the betterment of the management of the pharmacy service and the improvement of the medicinal service of the population and of medical institutions.

In the years of the 11th Five-Year Plan, medicinals rose by a factor of 1.3. The supplies of preparations for treating cardiovascular diseases increased. The range expanded, and the acceptance of medicinals for curing psychophysical and oncological diseases increased. The number of antibiotics put on the market in the pharmacy network increased by a factor of more than 2, including semisynthetic penicillins and other broad spectrum acting antibiotics. Thus, these antibiotics only in injection form are now on the market by a factor of 2.5 times greater than in 1980.

Basic sulfanilamide preparations, including those which are long acting, vitamins, and peroral antidiabetic agents are on the market in sufficient quantities. The provision of public health institutions and the population with antiseptic and other remedies has improved.

The USSR Ministry of Health continues work on the expansion of the purchases of necessary preparations in other countries based on the specialization and cooperation of their production in countries which are Comecon members.

Mechanized and automated accounting of goods is being introduced into the activity of pharmacy managements. This work has been completed in more than 100 pharmacy managements.

In spite of the work which has been done, the availability of medicinal care is not uniform; the pharmacy network in a number of oblasts and cities of the USSR republics is still insufficient, and the unresolved problem of optimal distribution of pharmacy institutions remains. Up to this time, pharmacy dispensaries of the second category are still not organized at all feldsher-midwife dispensaries, and mobile pharmacy dispensaries are not sufficient. The absence of a sufficiently branched pharmacy network limits the potentialities of the trend toward rural location of medicinal resources in the necessary volume and product assortment.

A considerable strengthening of the material-technical base of pharmacy institutions is required. This pertains especially to those Soviet Union republics in which up to the present time the problem of the transfer of pharmacy managements to the executive committees of the Councils of the Peoples Deputies is not resolved.

The problem of the provision of the pharmacy service with warehouse areas is still unresolved.

The problems of strengthening the material-technical base of pharmacy institutions arise more acutely in the light of the requirements of the April, 1985 Plenum of the CPSU Central Committee. They must be resolved in as short as time as possible in order to raise the quality of the work of the whole pharmacy system for the improvement of the provision of medicines to the population. For these purposes it is necessary for pharmacy managements to strive for solutions to the problem of the improvement of the material base of the rural economy and the development of the pharmacy network where it is still deficient.

To resolve this task, the USSR Ministry of Health has drawn up drafts of plans for the development of the material base of the pharmacy network for every Soviet Union republic. The task of the main pharmacy managements of the ministries of health of the Soviet Union republics consists of taking control figures for these divisions at sites for fulfillment and including them in the plans for economic and social development of republics for the 12th Five-Year Plan.

The development of a network of public health institutions, the expansion of the volumes of medical care rendered and the introduction of its new forms into practice, an increase in the number of beds, and the conducting of a universal dispensary system for the population cause the considerable rise in the requirement for medicinals. At the same time, in spite of the annual increase in resources, the production times of medicinals lags behind the public health requirement for them.

At the April, 1985 Plenum, the problem was posed of a substantial improvement in the provision of medicinals to the population. This is an urgent state task requiring special attention.

There are serious deficiencies, depending also on the pharmacy workers themselves, in the organization of provision of medicinals to the population and to treatment and prophylactic institutions.

Although there are several positive shifts in the work on planning the requirement for medicinals, however, cases of gross errors and miscounts are not rare, and this is one of the basic reasons for breakdowns in the distribution to the population of different preparations or the occurrence of above-norm stocks of medicines. In many republics, the commissions created for planning the need for medicinals work inefficiently. The recommendations of specialists are used insufficiently in their activity, and the effectiveness of the preparations and the outlooks for their use for different groups of illnesses are not assessed experimentally.

Under conditions of a limited supply of some medicines, the correct distribution and efficient use of all available resources and the provision of strictest control for their timely receipt for hospital patients and outpatients are extremely important. However, there are serious deficiencies in this very important division of the work of pharmacy and medical institutions. Many facts of the wasteful relationship to the use of medicinals were revealed in audits in the GSSR and TuSSR, some oblasts of the RSFSR, and in the UzSSR, BSSR, and MSSR.

Managers of the pharmacy institutions do not always make sure they have a complete product assortment of medicinals in pharmacies and do not take measures for timely provision of preparations to patients and filling of doctors' prescriptions. Many patients applying to pharmacies do not obtain the medicines necessary for them because the medicines are out of stock temporarily, and if they obtain them, the waiting periods in some cases are protracted. Cases are intolerable in which due to the negligence and irresponsibility of pharmacy workers, the patients cannot obtain medicines which are in the warehouse, and sometimes even in the pharmacy itself. Such occurrences are incompatible with the professional duty of the Soviet pharmacist, and his ethics, and we have no need for such "specialists"; it is necessary to eradicate such conditions most severely.

There are serious deficiencies and infractions in the organization and use of reserves of preparations both in pharmacies and pharmacy managements. In a number of cases, reserves are created groundlessly, and large amounts of medicinals are put in them.

There are serious deficiencies also in the organization of medicinal care to hospital patients. In many medical institutions, the managers have removed themselves from the control of the situation of the provision of medicines to patients. As the result, in a number of cases the patients do not receive the full amount of the prescribed medical treatment.

On the other hand, a negligent relationship to the use of state remedies selected for free medical treatment of hospital patients leads also to the creation in medical institutions of surplus stocks of medicines which are not used for a long time, spoil, and are written off. Workers in pharmacy institutions do not conduct work on the systematic verification of the presence and efficient use of medicinals which are at the disposal of medical institutions.

Letters from citizens continue to arrive at the USSR Ministry of Health on the problem of providing them with medicines. Cases are specified of the refusal of doctors to write a prescription for a preparation which is temporarily out of stock in the pharmacy which serves the medical institution.

At the same time, we still have not achieved such a position that physicians in carrying out medical therapy of patients use the whole range of remedies available at their disposal.

On the other hand, practices of multiple prescribing are still not obsolete, when up to 10 remedies and more, which are sometimes analogous in action, are prescribed simultaneously for one patient. This occurs in the treatment and prophylactic institutions of Azerbaijan, a number of oblasts of the RSFSR and the UkSSR, and in the Soviet Baltic republics.

To a considerable degree, the shortcomings in the provision of medicines to the population are explained by serious deficiencies in carrying out informational work between physicians and the population.

Not all pharmaceutical information offices established at medical institutions fulfill the functions conferred on them, and in their work there is no efficiency and appropriate effectiveness.

In many such offices, elementary working conditions and the necessary reference literature are lacking, telephones and telephone equipment are insufficient, and the managers of the treatment and prophylactic institutions in which these offices are organized do not pay proper attention to the improvement of their material-technical base.

The problem of the organization of information about remedies available for the population is not resolved everywhere.

The traditional reference desks in pharmacies are in no condition to satisfy the rising demands of medical workers and of the population.

Many pharmacy managements do not pay proper attention to this important division of work. The task includes organizing the daily operational information of medical workers, providing a close interrelationship of treatment and prophylactic institutions and pharmacy institutions for the purposes of joint solution of all problems of the distribution and efficient use of medicinal resources, especially those available in limited quantities; and providing the establishment of a monthly accessible information-reference service for the population.

The practice of the organization of the work of reference desks in the Ukraine, Belorussia, Latvia, and several oblasts of the RSFSR shows that the use of the means of communication, modern computer equipment, and minicomputers must be a basic reference-information service for the population and medical and pharmacy workers.

Computer equipment is a resource for the improvement of the work of pharmacy managements. It more and more must encompass the basic directions of the activity of pharmacy institutions, thereby creating a favorable climate for the development of scientific and technical progress in the system. However, unfortunately, we have managers who still do not understand the value of computer equipment in the matter of the improvement of provisions of medicines to the population. In a number of pharmacy managements of the country, automated treatment of the results of the inventory of pharmacies and the obtaining of consolidated data on the expenditure for remedies in the retail pharmacy network are being introduced at a slow pace. The automation of the

accounting of the values off pharmacy management warehouses is not organized in the GSSR, ArSSR, and AzSSR.

The Pharmacy All Union Scientific Research Institute (VNIIF) has not been linked to the solution of this important problem and does not offer the necessary practical help to pharmacy managements.

The decisions of the April, 1985 Plenum of the CPSU Central Committee pose the task of a serious improvement in management and speak of the necessity "to convert actively to mainly new technological systems and to the latest generation equipment having the highest efficiency. (Footnote 3) (Ibid, p 10). We cannot resolve these tasks in the pharmacy system without wide adoption of computer equipment at all stages of providing medicine to the population.

Great importance is given to publicizing the work of public health institutions. However, the population in many republics, krays, and oblasts are poorly informed about the order of providing medicines and about how the work of the pharmacy is organized for rendering medicinal care to the population. The USSR Ministry of Health established that pharmacy managers report twice a year to the population and elucidate the questions of all interested citizens. However, this work is still not done enough locally.

The April, 1985 Plenum of the CPSU Central Committee and the conference held by the CPSU Central Committee propose in the first plan the basic acceleration of scientific and technical progress as the main strategic key factor in the intensification of the national economy and the best use of accumulated potential.

It proceeds too sluggishly in our system, and numerous scientific studies and dissertation work are done at such a low level that the results of only a few of them can be used in the practical pharmacy on the scale of the whole country. The coordination of scientific studies with other institutes is poorly applied, and effective control is not arranged for the adoption of the results of completed scientific studies in pharmacy practice. This occurs because the Pharmacy Problem Commission and also the VNIIF--the main institute on the problem--ineffectively fulfill the leading role of coordinator of scientific studies in the country in the field of pharmacy.

In recent years, the country has actively carried out a process for the improvement of management of the whole national economy, reviewed the management structure, simplified the apparatus, and eliminated excess links in management. This process affects our system also. However, theoretical, organizational-economic studies on this division of activity of the pharmacy system have been done insufficiently. This also confirms the fact that the combined subject plan of scientific research work on Pharmacy problems includes only 12.4 percent of the work dealing with studies on the improvement of the organizational forms of providing medicines to the population.

At the present time, the problem of the necessity for radical improvement of the activity of the pharmacy system and improvement of the pharmacy service

management based on wide introduction of data processing and computer equipment remains acute.

Development is necessary of mainly new scientific approaches to the organization of the preparation of medicines in pharmacies based on new technologies, the use of modern instruments, apparatus, and equipment, which would enable the organization of labor in pharmacies to be improved, productivity to be raised, and working conditions of pharmacy workers to be improved.

12410
CSO: 1840/093

KIEV RADIOLOGY CENTER

Moscow TRUD in Russian 11 Sep 86 p 4

[Interview by TRUD correspondent A. Alekseyev with Ukrainian SSR Minister of Health, A. Romaneko]

[Text] Strictly speaking, problems in medical radiology have been studied in Kiev for a long time. Research is continuing even now in several scientific institutes. Now they must unite their efforts and intensify research. These are the main tasks which lie ahead in the creation of the Center for Medical Radiology.

The Center will be made up of three scientific subdivisions: the Institute of Experimental Radiology, the Institute of Clinical Radiology, and the Institute of Epidimiology and Prophylaxis of Radiation Injuries.

Specialists at the Center first and foremost must continue thorough examinations of all the residents of the territory who have suffered as a result of the accident. After that, on the basis of these results, a special register will be compiled of the systematic observations of people who were exposed to various doses of radiation. In other words, it is necessary to have a complete picture of certain regions and groups of people. Only after that will it be possible to implement a full range of systematic preventive and medical measures for the populace.

Simultaneously, pharmacists and physicians will conduct a search for new and more effective means of treatment, especially for the kinds of medicines which will prevent the accumulation of harmful radioactive substances in body tissues.

Scientists and specialists from the Institute of Epidimiology and Prophylaxis of Radiation Injuries are faced with a large-scale study of public health in different areas with higher levels of natural radiation.

Today, radiologists are also concerned about problems connected with radiation therapy. We are told, after all, that such therapy is widely practiced around the world in the treatment of malignant tumors. Therefore, more thorough research by the Center's radiologists will help to find the optimum doses of therapeutic radiation for human health, and this means that the treatment itself will be both harmless and effective.

To find a safe limit of radiation doses, is important not only for patients, but also for completely healthy people. On the basis of this research, it will be possible to provide scientifically based standards for those who are working at atomic electric power stations or any other installations which are using ionizing radiation.

In conclusion, I may say that all of the theoretical and experimental research of the Center's staff will be closely connected to clinical practice. On the Center's base, a new republic clinic will be established not far from Kiev in Pushcha-Voditsa. It will be supplied with the most modern medical equipment.

Construction continues on the Center's 600-bed specialized clinics and on the Center's laboratory buildings. Work will begin there as early as October of this year. All of the above is a clear demonstration of the enormous concern for the health of the people who have been affected by the disaster.

/9835
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DIFFICULTIES WITH HEART TRANSPLANT OPERATIONS

Moscow MOSCOW TELEVISION SERVICE in Russian 1530 GMT 11 Nov 86

[From the "Vremya newscast; N. Prokofyeva video report]

[Summary] V.I. Burakovskiy, director of the Moscow Institute of Cardiovascular Surgery, makes his customary morning rounds in the company of his assistants, viewing the patients who were operated upon the day before. As video shows a video display unit, monitoring equipment screens, and a patient in a polyethylene bubble with a heart stimulator connected, Prokofyeva interviews Burakovskiy in his study. The latter holds a sheet of paper with several schematic drawings of a heart in cross-section to illustrate what he is saying.

[Prokofyeva] "Vladimir Ivanovich, we have just visited the postoperative ward where we have seen several patients who were operated on yesterday or in the early hours of the morning. What sort of operation is it?"

[Burakovskiy] "For example, you have seen patients suffering from extremely grave heart failures and who until very recently were believed to be inoperable. There were even some attempts to transplant hearts to such patients. But now these constructive operations have been implemented in practice, and you have seen their outcome. Here is a completely unique operation. The patient has only one heart chamber instead of two, a common chamber. And after wide access to this common chamber had been gained, an inter-chamber wall was installed. This was the second operation of this kind in our institute. Both proved to be successful.

[Prokofyeva] "Even worldwide, there have been only a few operations such as these. A question arises: Why, at this high level of development of cardiovascular surgery, have failures with heart transplants been observed, failures because the operation we recently reported was not the first one?"

[Burakovskiy] "Giving a straight answer to this question, and this should be done, I believe that the USSR Academy of Medical Sciences Presidium has made an incorrect decision regarding organization of the heart bank. The heart bank should be absolutely independent, and not attached to a particular

establishment. It should be similar to emergency aid stations. The heart-transplant operation is not that difficult; there are other problems, such as the immune response which should be treated with most serious attention at present.

/9835
CSO: 1840/172-E

POOR UZBEK PHARMACY SERVICES

Tashkent PRAVDA VOSTOKA in Russian 1 Nov 86 p 3

[Article: "Place Pharmacy Operations Under the Control of the Deputies"]

[Text] The status of public pharmaceutical services in the city of Syrdarya and the Syrdarinskiy Rayon was examined at a session of the Uzbek SSR Supreme Soviet Permanent Commission for Public Health and Social Security which took place on October 31.

In the addresses made by deputies Kh. K. Kamalov, U. R. Muminov, N. A. Umerov, M. Navruzova, A. I. Shamsutdinova, A. I. Balakin, N. Ya. Gaibov, T. Nurov, U. Utarshayev, and A. I. Fazylbekov, it was noted that the work being undertaken by the local Soviets and the health authorities in the city and rayon still do not meet the established requirements. Five pharmacies have no water supply, and two are without telephones. Most of the pharmacy institutions do not have the proper conditions for preparing medicinals. This has been forcing residents to go to pharmacies located at considerable distances from their homes.

The deputies pointed out that drug storage regulations are being violated in most pharmacies because of space shortages. There is an acute shortage of refrigerators, air conditioners, and equipment. The pace at which problems concerned with pharmacy construction and repair are being resolved is extremely sluggish. Funds allocated for these purposes are not being materialized.

Because the pharmaceutical information service is not carrying out its functions, physicians often prescribe drugs that are not available at the pharmacies. There are many deficiencies in the operations of pharmacy stations.

All of this has come about because the Soviets of the Peoples' Deputies of the city of Syrdarya and the Syrdarinskiy Rayon as well as the health and pharmacy administration authorities of the oblast have been inefficiently studying pharmacy operations. In addition, they have not been rendering assistance to pharmacy personnel, and no precise planning or estimates have been made for surplus drug reserves that are not in demand.

The discussion of the status of public pharmaceutical services in Syrdarya and the Syrdarinskiy Rayon gave cause for an analysis of that situation in the other oblasts of the republic. The deputies noted that the same noted shortcomings in pharmacy operations were largely characteristic of the other cities and rayons as well. Pharmacies are unevenly distributed, and in a number of cases are without water, heat, plumbing, and telephones. Some of those pharmacies do not keep proper records of citizens' requests and lack planning procedures.

The local Soviets are not giving this important operational sector the attention that it requires. The accountability reports presented by pharmacy supervisors at ispolkom sessions are rarely heeded. But public medical services cannot be improved without such reports.

The Permanent Commission of the republic's Supreme Soviet has recommended that the Syrdarya gorispolkom and rayispolkom as well as the Soviets of Peoples' Deputies adopt immediate measures to eliminate the noted shortcomings. More attention must be given to improving controls over currently operating pharmacies and the construction of new ones as well as a strengthening of their material base. More concern must be given to the needs of pharmacists.

6289
CSO: 1840/166

PHARMACEUTICAL ASPECTS OF CAMPAIGN AGAINST DRUNKENNESS AND ALCOHOLISM

Moscow FARMATSIYA in Russian No 4, Jul-Aug 86 pp 1-4

[Article by M.T. Alyushin, chairman of the governing board, All-Union Scientific Society of Pharmacists, Moscow]

[Text] The 27th Congress of the CPSU was held within the context of a national political and industrial renaissance.

The pharmaceutical community has shown unreserved approval and support for the Party's program for acceleration of socio-economic progress, enhancement of discipline and order in all spheres of life, further improvement in the quality of life in the USSR, and the affirmation of sobriety.

The decisive measures that are being implemented against drunkenness and alcoholism have already had a positive impact on the moral climate in workers' collectives, as well as in improving discipline and efficiency in the industrial environment.

Since the campaign against drunkenness and alcoholism is regarded as a social problem with serious political implications, the CC CPSU has charged the All-Union Voluntary Sobriety Society (AUVSS) with responsibility for conducting the anti-alcohol campaign. The constitutive conference of the AUVSS was held on September 25, 1985; the conference dealt with practical matters and the organization of local chapters, as well as the election of central governing bodies and confirmation of the statutes. Academician Yu.A. Ovchinnikov, vice-president of the USSR Academy of Sciences, was elected chairman of the Central Governing Soviet of the AUVSS.

In the elapsed period of time considerable progress has been made in establishing primary, rayon- and municipal-level chapters of the AUVSS.

The fundamental goals of the AUVSS are identical to the professional and social obligations of pharmaceutical workers who are called upon to guard public health.

The workers' collectives of the various pharmaceutical enterprises, industrial plants and pharmacies, higher and interme-

diate pharmaceutical educational institutions, and the department of the All-Union Scientific Society of Pharmacists (AUSSP) are actively participating in bringing to fruition the multifaceted Party program intended to abolish drunkenness and encourage sobriety, a program that relies on organizational, economic, administrative, legal and educational measures.

In December 1985 a joint plenary session was held in Moscow which encompassed the Council of Scientific Medical Societies, the Scientific Council of the USSR Ministry of Health, and the Central Committee of the Medical Workers' Trade Union. One of the more important topics under discussion concerned support for biomedical research on alcoholism, methodological aspects of anti-alcohol propaganda, and dissemination of information about a wholesome way of life. The plenum was also addressed by V.A. Nasonova, chairperson of the Council of Scientific Medical Societies and Academician of the USSR Academy of Medical Sciences, on the role of medical societies in the propaganda campaign against drunkenness and alcoholism.

The Presidium of the AUSSP in its January 1986 meeting considered the resolutions of the joint plenum. The decision was made to create special commissions within the framework of the AUSSP and the republic-level pharmaceutical societies dealing with anti-alcohol propaganda on a permanent basis, and to formulate plans for promoting sobriety in conjunction with the Znaniye society and the All-Union and republic-level societies, as well as with trade unions and other organizations. The Presidium of the AUSSP also proposed that the pharmaceutical aspects of the campaign for sobriety be reviewed at the 4th All-Union and the republic-level meetings of pharmacists, and at the plenary sessions of the governing bodies of pharmaceutical societies.

Among the variety of drugs used in the treatment of alcoholism teturam (disulfiram) and its long-acting form esperal have gained considerable prominence, as have tsiamid and others. However, the commonly employed agents are toxic. In addition, adverse effects affecting the cardiovascular, peripheral nervous and gastrointestinal systems have been noted in the course of treatment; these contraindications prevent more extensive use of these agents. Consequently, the search for effective agents with minimal side effects remains a major concern. Currently, the All-Union Scientific Research Institute of Pharmacy is determining the optimal dosage forms of a novel anti-alcohol drug -- a derivative of pyrazole -- which acts on enzymes involved in ethanol metabolism; the agent was synthesized and studied at the Scientific Research Institute of Pharmacology of the USSR Academy of Medical Sciences.

For each dosage form the physicochemical and biological compatibility of the components must be determined, analytical methods must be developed for the quantitative and qualitative analysis of the drug in the dosage forms, stability on storage must be assessed, and in vivo and in vitro activity evaluated.

In the USSR extensive use is made of alcohol-containing preparations, including decoctions or liquid extracts of medicinal plants. While the use of ethanol in many technical processes cannot be avoided, its presence in substances dispensed to patients cannot always be justified. Scientific data obtained in recent years have put to rest the common notion that small amounts of alcohol are helpful in colds and other diseases.

The pharmaceutical technologists are faced with the problem of replacing alcohol in medicinal preparations with other solvents that are suitable for intake and contain bioactive ingredients. The pharmaceutical aspects of this problem have been analyzed in detail at the All-Union working conference held in December 1985 under the auspices of GAPU [expansion unknown], USSR Ministry of Health, at the All-Union Scientific Research Institute of Pharmacy, entitled "Rational Utilization of Medicinal Plants Based on Waste-Free Technology and Nonalcoholic Phytoextraction".

A number of original papers dealing with this topic were presented by G.I. Molchanova, L.I. Brutko, T.D. Dargayeva, A.S. Romanova, L.V. Sollogub, and others. The need to expand such studies has become obvious. Such studies should receive constant attention at many subdivisions of scientific research institutes and the appropriate academic chairs of educational institutions.

On February 28, 1986, the USSR Ministry of Health has issued instructions on the acquisition, use, storage, and dispensation of ethanol at pharmaceutical depots of the Ministry. The new instructions superseded the previous instructions issued on December 12, 1962. The backround work was done at the All-Union Scientific Research Institute of Pharmacy and GAPU of the USSR Ministry of Health.

The purpose of these instructions and regulations was to enhance control over alcohol at the depots under the jurisdiction of the USSR Ministry of Health.

In the 20 years that passed since the instructions were first issued by the USSR Ministry of Health considerable changes had occurred at the pharmaceutical storehouses. Mechanized inventory control was introduced which required novel, unified forms of documentation. In addition , new instructions were published, such as those dealing with inventory control at the drug depots of the pharmaceutical administration of the USSR Ministry of Health and which were confirmed on January 20, 1984, as well as GOSTs and other documents which regulated the determination of alcohol, its storage, and other processes. This required a review of rules and regulations pertaining to the acquisition, processing, storage, and dispensing of ethanol in accordance with current requirements.

A review of the instructions on the acquisition, processing, storage and dispensing of ethanol by drug depots of the health system and the instructions issued by the USSR Ministry of Health on December 12,

4, 1962 , as well as the formulation of new documentation were based on direct studies on the acquisition, processing, storage and dispensing of ethanol by selected pharmaceutical depots, as well as studies on the literature and regulations applicable to the health system and the food industry, and analysis of comments and suggestions made by pharmaceutical workers at 40 republic-level pharmaceutical governing bodies.

In 1969 the USSR Ministry of Health issued an order entitled "Standards Regarding Ethanol Utilization at Medical Facilities", which was developed by the drug use department of the All-Union Scientific Research Institute of Pharmacy. These regulations were developed as a result of evaluation of alcohol utilization at pharmacies, hospitals, ambulatory polyclinics, medical emergency and blood transfusion stations, sanitary-epidemiologic facilities, and so forth.

In 1986, at the urging of the GAPU of the USSR Ministry of Health, the drug use department developed a plan for monitoring alcohol use at pharmacies in on-site drug preparation.

Studies have been commenced on evaluating formulations calling for ethanol in order to standardize the entire process.

Personnel at pharmacies and in the pharmaceutical industry should become familiar with regulatory documents, such as the orders of the USSR Ministry of Health entitled "Measures for the Prevention of Drunkenness and Alcoholism" (6/25/85) and "Control of Dispensing of Sanitary, Hygienic and Alcohol-Containing Medicines at Pharmacies" (7/25/85), and other documents. The pharmaceutical workers are faced with the following tasks: 1) Utilization of alcohol in technical processes for the production of alcohol-containing medicinal agents in strict adherence to binding regulations, 2) Strict adherence to the appropriate regulations affecting acquisition, storage and dispensing of alcohol and alcoholic medications, and 3) Take measures to prevent the use of medicines as a source of alcohol intake.

Drug information offices at large therapeutic and preventive institutions should accord more attention to incompatibility of drugs and alcohol. For example, it is common knowledge that combined use of alcohol and the antidiabetic agents that are derivatives of sulfonylurea may lead to hypoglycemic coma. Simultaneous intake of alcohol and bearberry decoction, butadione, nitrofurantoins, barbituric acid derivatives, or amidopyrine may lead to marked loss of therapeutic efficacy.

In view of this fact, personnel at the pharmaceutical information offices are duty-bound to inform physicians about all possible cases of drug incompatibility with alcohol. This is particularly important when dealing with physicians treating alcoholics.

The problems of drug-alcohol interaction should be illuminated in the

special bulletins of polyclinics and on notice boards managed by the drug information offices at health facilities and pharmacies.

The pharmaceutical, medical and social aspects of alcoholism should be brought to the awareness of future specialists during their training at intermediate and higher schools of pharmacy, with special emphasis on the role of the pharmacist and druggist in the campaign against alcohol abuse.

The experience of the Pyatigorsk Pharmaceutical Institute in dealing with inebriation and alcoholism deserves attention. The study of each scientific discipline emphasizes instillation of a wholesome way of life in the students. The students are constantly reminded that sobriety should be the hallmark of a druggist both in his private and professional life, since he stands watch over public health.

After the publication of the resolutions of the CC CPSU, the Council of Ministers of the USSR, and the Ukase of the Presidium of the Supreme Soviet, that have outlined a multifaceted approach against drunkenness and alcoholism, the war against this social evil has assumed massive proportions. The professional obligation of every pharmaceutical worker is to personally participate in this program of national importance to ensure that sobriety becomes one of the cornerstones of a healthy way of life.

12172
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UDC 615.12+164.27]:008](47+57)

PREDICTING BASIC TRENDS IN RURAL PHARMACEUTICAL SERVICES IN 12th FIVE-YEAR PLAN

Moscow FARMATSIYA in Russian No 4, Jul-Aug 86 (manuscript received 15 Jun 84) pp 4-7

[Article by L.V. Borisenko, All-Union Scientific Research Institute of Pharmacy, Moscow]

[Text] Developments in public health and in the pharmaceutical services, the latter representing an inherent component of the former, are proceeding according to plan and in full agreement with the fundamental trends in the social and economic development of the USSR. Systematic plans are being formulated for the next 5, 10 and more years for the USSR as a whole and the individual republics, to cover advances in public health and the pharmaceutical services [2,3].

An important aspect in the prediction of future developments in rural pharmaceutical services is represented by an analysis of ongoing processes, complexity of the situation, and of novel trends and their significance for the future, as well as by identification of possible alternative developments. Prediction is recognized to be a variable and a preliminary factor, and such data provide a starting basis for the formulation of plans that are to determine the future of pharmaceutical services [1].

In the qualitative sense, new approaches were taken in predicting the basic economic and staff changes expected to affect rural pharmacies in the 12th Five Year Plan. These approaches relied on a comprehensive evaluation of health status indicators, perspectives in public health developments, innovations in health delivery including mass screening, demographic changes, establishment of new territorial agricultural complexes, and advances in the medical and pharmaceutical sciences.

The prognostic studies were based largely on anticipated improvements in health care and significantly enhanced availability of drugs and medical equipment and supplies in the rural areas. In order to improve the accuracy of the predictive studies economic and mathematical models were utilized in conjunction with computerized data pro-

cessing. By combining the latter approaches with the traditional method of forecasting a comprehensive program was developed that provided a systemic basis for the analysis of the interrelationship among economic factors and the results.

The predictive studies were based on a detailed evaluation of the developments and influential factors affecting the rural pharmacy situation in the 10th and the 11th Five Year Plans. Such studies revealed the extent to which economic factors affected the drug supply and general health programs in the rural areas. These analytical studies were conducted in terms of availability of medicinal preparations and medical equipment and supplies per one rural resident. The resultant index provided a basis for ranking the Soviet republic into four groups. The first group -- with the highest index value -- consisted of the Baltic republics; the second group encompassed the RSFSR, Ukrainian SSR, and the Belorussian SSR; the third group was represented by Moldavia, Georgia, and Kirghizia, and the fourth group by the Turkmen SSR, Uzbek SSR, Tajik SSR, Azebaijan SSR and the Armenian SSR.

The primary factors which went into the compilation of this index consisted of the number of pharmaceutical workers per a population of ten thousand, the size of the rural population served by one pharmacy, the total number of physicians representing various specialties and the number of hospital beds per a population of ten thousand rural residents, the number of ambulatory polyclinic visits per one resident, and the average turnover of supplies in a rural pharmacy.

A multifactorial comprehensive analysis, utilizing the methods of economic statistics and computer-based data processing, was performed for the data for each group of republics to define the influence of each factor on drug availability. In the majority of the republics there was a direct correlation among these factors in that time span. A high index was directly related to greater availability -- per resident -- of drugs and medical equipment and supplies. It also became apparent that drug and medical equipment availability in the rural setting was not related to a sharp increase in any one factor. Any imbalance in the availability of drugs and the number of health facilities can only be rectified by a balanced development of the public health and pharmaceutical services in the rural areas.

The analysis revealed that despite the development of the rural pharmacy network in the 10th and 11th Five Year Plans, the number of rural pharmacies in the majority of the republics and for the USSR as a whole is below the levels approved by the USSR Ministry of Health and the ministries of the individual republics.

It has become apparent that despite the constant growth in the availability of drugs and medical equipment in the rural areas, the rate of growth of these indicators in the time span under ana-

lysis did not decrease in the USSR as a whole, and in some republics actually exceeded them. These facts indicate that medical and pharmaceutical care has improved in the rural areas, as well as the fact that the rural demand for drugs and medical equipment has not been fully met and further improvements may be anticipated. In addition, it has to be understood that a portion of the rural hospitalized and ambulatory patients are seen in cities where their needs for drugs are fully met.

Analysis of the personnel at rural pharmacies has revealed a shortage of trained pharmacists.

Therefore, it is evident that further improvements in the material basis and personnel at the rural pharmacy services are required in order to meet the demand for medicinal preparations and medical equipment and supplies. These considerations provided the basis for making plans for the period 1986-1990 with regard to rural pharmacies, drug supplies, medical equipment, and pharmaceutical cadres for the USSR and the individual republics. Current estimates hold that by 1990 the number of rural pharmacies will increase by 2.5% in comparison with the number in the 11th Five Year Plan.

The increase in the number of rural pharmacies in the 1986-1990 period shall decrease the patient load per pharmacy to acceptable standards. This standard is expected to be met in the 12th Five Year Plan in the RSFSR, Ukraine, Belorussia, Kazakhstan, Georgia, and Moldavia.

Studies on the development of the rural pharmacy system in the 12th Five Year Plan have revealed certain trends. One evident trend is that the development of the rural pharmaceutical services is outstripping the rate of growth of the rural population. The coefficient to which the former exceeds the latter has been calculated at 1.05, indicating the social consequences of rural pharmaceutical services as they expand.

The second major trend is the overwhelming development of self-supporting pharmacies in the republics where, for historical reasons, they had been neglected. This is particularly true of the Central Asian republics and provides yet another indication of the increasing availability of pharmacy services in this region and, thereby, elimination of territorial differences in rural pharmaceutical systems.

The third major trend that has come to light is that small pharmaceutical retail outlets, primarily category II outlets, represent a reserve for further expanding rural pharmaceutical services in the USSR as a whole and in the republics. This potential reserve is particularly high in the RSFSR, Kazakhstan and Azerbaijan.

The supply of drugs and medical devices in the rural areas is expected to increase by 14.5% by 1990 in terms of the rural population in comparison with the per capita data for the 11th Five Year Plan. The improvement is expected to be most significant in the Baltic republics, RSFSR, Ukraine and Belorussia. In Azerbaijan, Armenia, Turkmenistan and Uzbekistan the improvements in this parameter will be less impressive than for the entire USSR.

The per capita supply of drugs and medical equipment and supplies shall be different in the various republics in the 12th Five Year Plan, which is a perfectly normal phenomenon. The climatic, geographic and national characteristics -- noteworthy for their inertia in the evolutionary sense -- shall have their obvious impact on health status indicators and, therefore, on the availability of drugs and medical supplies. However, these factors cannot be so great as to lead to a two-fold per capita difference between republics with essentially similar characteristics, as is the case in the Transcaucasus. These differences have to be attributed to administrative causes that can be rectified. It is to regions with poor rural pharmaceutical services that special attention must be accorded and reliance placed on scientifically-substantiated recommendations for further improvement in this sphere of medical care.

One of the more important aspects of rural pharmaceutical services consists of staffing with highly qualified specialists with intermediate and higher pharmaceutical training.

The USSR Ministry of Health has made plans to direct pharmaceutical cadres to the rural areas. One of the measures calls for assigning graduates of pharmaceutical institutes and faculties largely to rural localities. These assumtions underlie the prediction for the expected number of specialists in the rural pharmacy service in the 12th Five Year Plan. It is now anticipated that by 1990 the number of specialists with a pharmaceutical education will increase by 5%,and of druggists by 12%,in the rural pharmaceutical system.

The plans made for the 12th Five Year Plan -- based as they are on indicators representing material, technical, and personnel resources -- make possible a preliminary assessment of the anticipated state of the rural pharmacy system, drug turnover and supply, and of personnel availability for the USSR and the republics. These studies lead to the conclusion that the 12th Five Year Plan will see a continuation of proportional growth in rural pharmaceutical services in the USSR as a whole and in the individual republics. Such developments shall facilitate an increase in rural supplies of medicinal preparations and serve to diminish differences in rural and urban pharmaceutical services.

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BIOMEDICAL TRAINING OF PHARMACISTS

Moscow FARMATSIYA in Russian No 4, Jul-Aug 85 (manuscript received 23 Sep 85) pp 47-49

[Article by V.I. Prokopishin and V.I. Gikavyy, Kishinev Medical Institute]

[Abstract] In addition to professional competence as drug experts, pharmacists must also demonstrate proficiency in emergency medicine, in line with the latest decree from USSR Ministry of Special Education. Accordingly, the pharmacy curricula at the appropriate institutes have been upgraded to provide more clinical training. In the present programs, particularly as practiced at the Kishinev Medical Institute, a total of 1014 hours (lectures and laboratory work) are devoted to physiology, anatomy, microbiology, biochemistry, hygiene, pharmacology, emergency medical care, pathology and chemotherapy. Experience has shown that one factor predisposing to difficulties in comprehending pathology lies in a poor understanding of human physiology and anatomy; however, the new educational program for pharmacists does not anticipate increasing the number of hours devoted to these two subjects. In view of the importance that the course sequence has for the professional compentence of the pharmacist as a drug expert rendering assistance to the physician and as an expert in premedical emergency medical assistance, the implementation of a new curriculum intended to correct existing educational shortcomings is of paramount importance.

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COST EFFECTIVENESS OF DRUG UTILIZATION IN HOSPITALS

Moscow FARMATSIYA in Russian No 4, Jul-Aug 86 (manuscript received 15 Jul 85) pp 54-57

[Article by V.M. Tolochko, M.A. Alyushina, T.F. Muzyka and L.S. Strelnikov, Kharkov Pharmaceutical Institute; Pharmacy Administration, Kharkov Oblast Executive Committee]

[Abstract] An analysis was conducted on the cost effectiveness of on-site preparation of cardiovascular agents (analgin, dimedrol, platiphylline) vis-a-vis using prepackaged dosage forms supplied by the pharmaceutical industry. On an overall basis preparation of dosage forms in the hospital pharmacy was found to be ca. 280% more expensive than using prepared dosage forms, largely due to underutilization of the excessive amounts. The obvious conclusion is that one way of reducing the costs of drugs is the production of drugs in forms and dosages suitable for immediate clinical use, and a careful analysis of the supply and demand characteristics of individual drugs. References 1 (Russian).

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UDC 617.7-053.2-082+617.7-053.2-084](470.311-25)

IMPROVEMENTS IN PEDIATRIC OPHTHALMOLOGY SERVICES IN MOSCOW

Moscow VESTNIK OFTALMOLOGII in Russian Vol 102, No 5, Sep-Oct 86 pp 3-6

[Article by S.B. Korolchuk, Ye.I. Kovalevskiy, professor, and G.A. Novgorodtsev, doctor of medical sciences, Moscow Municipal Children's Eye Center at the No 1 Children's Eye Disease Clinical Hospital]

[Abstract] An analysis was conducted on ocular morbidity in the Moscow pediatric population in order to plan preventive measures and assure optimal care. The statistical data showed that the overall ophthalmological morbidity was on the order of 100-110 per thousand, with the highest incidence occurring in children less than 1 year old (115/1000) and in the 1-3 year age bracket (120/1000). The morbidity figures for the 2-7-year-olds were 108/1000, and for the 7-15-year-olds 104/1000. Inflammation of the adnexa oculi accounted for 39% of the pathology, and refractive abnormalities for 58%. The general tendency is for inflammatory conditions to decrease in significance, and for the refractory problems, especially myopia, to increase. On that basis special efforts are being made to identify children at risk via mass screening [dispensarization], to increase the index of suspicion of, and to implement educational and treatment modalities.

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PERMANENCE OF SERVICE OF PRODUCTION STAFF AT PHARMACY ESTABLISHMENTS

Moscow FARMATSIYA in Russian No 6, Nov-Dec 85
(manuscript received 20 Nov 84) pp 52-54

[Article by V.L. Bazarnyy, T.V. Reztsova and I.M. Razdorskaya; Kursk Medical Institute]

[Abstract] The article reports on the duration of service of key personnel in the Pharmaceutical Administration [APU] in Belgorod, Voronezh, Kalinin, Kursk, Orel, Tula and Yaroslavl' oblast executive committees. Information was based on official employment rosters over a set period. The significant variations in personnel permanency are presented in a chart, which shows that the highest stability was in the Belgorod and Kalinin oblasts, while the greatest movement was found in the Orel, Kursk and Voronezh oblasts; personnel movements in Yaroslavl were three times those in Belgorod. The data are intended to assist in analysis and correction of the conditions, both in employment and in interpersonal relationships, that lead to instability in employment patterns. References 6 (Russian).

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UDC 614.2:[615:002

DETERMINATION OF INFORMATION REQUIREMENTS OF PUBLIC HEALTH WORKERS BY MEANS OF SOCIOLOGICAL STUDIES

Moscow FARMATSIYA in Russian No 2, Mar-Apr 86
(manuscript received 31 Jan 85) pp 4-7

[Article by L.V. Moshkova, T.D. Semenova, N.P. Kumanina and T.I. Urusova, All Union Scientific Research Institute of Pharmacy, Moscow]

[Abstract] Automated information retrieval system "Lekarstvo" was developed to provide detailed information on drugs to a wide assortment of public health workers subscribing to this program. In order to improve the search methods, questionnaires were sent out to evaluate specific and general interests and most-often-appearing requests. The questionnaires covered three fields: general demographic area covering employment and specialization; types of requests of interest and information on the retrieval hardware available. The response rate was 93-97.7% covering medical and pharmaceutical specialties. It was shown that information requirements were directly related to years of occupational experience, position and scientific degrees. A list was developed, classifying the type of requests by these users. References 8 (Russian).

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UDC 615:[57+61]:378.661

TEACHING OF BIOLOGICAL AND MEDICAL SUBJECTS IN PHARMACEUTICAL INSTITUTES

Moscow FARMATSIYA in Russian No 2, Mar-Apr 86
(manuscript received 11 Aug 85) pp 36-41

[Article by A.N. Kudrin, V.V. Ryazhenov and O.N. Davydova, First Moscow Medical Institute imeni I.M. Sechenov]

[Abstract] Explosive development of new commercially-available drugs created many problems including such innovations as self-medication, polypragmasia. Even with best intentions, a physician cannot master all the fine characteristics of such a multitude of medications. To solve some of these problems, new specialists have emerged: clinical pharmacologists. The new curriculum for such specialists aims at expansion of medical biological and pharmacological background and includes socio-political, bio-medical, chemical and specialty courses. To prepare such individuals for this task, exposure to certain fundamental disciplines is required: biology, physiology, pathology, biochemistry and microbiology. Specific requirements for each subtopic were discussed. A novel course of pharmacotherapy was introduced aimed at close interaction between the pharmacist and attending physicians in developing therapeutic strategies. References 17: 14 Russian, 3 Western.

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UDC 615.12+614.27]:65.012.2

MINI-COMPUTER BASED DETERMINATION OF DRUG NEEDS ON LEVEL OF INTERHOSPITAL PHARMACY

Moscow FARMATSIYA in Russian No 2, Mar-Apr 86
(manuscript received 15 May 85) pp 47-48

[Article by N.N. Popova and V.A. Kalashnikov, Pharmacy Administration of Ryazan Oblispolkom; Section of ASU (automated control system?) Oblast Clinical Hospital, Ryazan]

[Abstract] Automation serves as a tool for data processing as well as a regulatory vehicle for managing drug supply and distribution. Such a system is used at the interhospital pharmacy in Ryazan to control drug flow and inventory. There appears to be a "basic load" of drugs used every month with well established nomenclature and constant level of requirements. Sporadically used drugs represent a group with constantly changing nomenclature and degree of utilization. This system attempts to normalize routine orders for drugs to avoid peaks and troughs in drug flow.

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WORK OF CENTRAL RAYON PHARMACY ANALYSTS IN AFFILIATED PHARMACEUTICAL INSTITUTIONS

Moscow FARMATSIYA in Russian Vol 34, No 5, Sep-Oct 85
(manuscript received 28 Jan 85) pp 61-69

[Article by M.I. Kuleshova, L.N. Guseva and G.M. Slyvakova, All-Union Scientific Research Institute of Pharmacy, Moscow]

[Abstract] Central rayon pharmacies have been in operation for as much as 25 years, and presently represent about 12% of all pharmacies. One of their major functions is monitoring adherence to pharmaceutical rules and quality of medications produced at pharmaceutical institutions attached to them. The authors studied the annual reports on the work of pharmaceutical analysts, and found that each central rayon pharmacy had 7 to 12 attached pharmacies and 4 to 12 treatment institutions, averaging 500 to 1200 beds total per central rayon pharmacy. From 60 to 80% of central rayon pharmacies are staffed with analysts; analysts were found to change employment frequently. In addition to monitoring the quality of medications, analysts perform extensive organizational-methodological and consultative work with attached institutions, involving significant amounts of travel. The duties of the analyst are outlined, and tables illustrate the mean time spent by analysts in various types of work. Sample plan and schedule forms for use by analysts are presented. References 4 (Russian).

6508/9835
CSO: 1840/088

UDC 614.3/4:614.876(476.2)

RADIATION HYGIENE OPERATIONS OF GOMEL OBLAST SANITARY-EPIDEMIOLOGICAL STATION

Minsk ZDRAVOOKHRANENIYE BELORUSII in Russian No 9, Sep 86 (manuscript received 5 Sep 86) pp 59-61

[Article by A. G. Kondratyev, M. A., Vinogradov and A. A. Verbovikov (received 27 Dec 85), Republic Sanitary-Epidemiological Station (Chief Physician Yu. S. Danishevich), Gomel Oblast Sanitary-Epidemiological Station (Chief Physician Z. A. Khupal)]

[Text] Abstract. Long-term radiation hygiene work undertaken at the Gomel Oblast Sanitary-Epidemiological Station is described. An examination is made of problems concerned with the control of ionizing radiation sources and personnel working conditions. Operations planning, specialist training methods, and achieved results are discussed. Three references. Key words: Gomel Oblast Sanitary-Epidemiological Station, radiation hygiene, work experience, specialist training, results.

The use of nuclear energy for peaceful purposes and the use of radioactive and other sources of ionizing radiation in the national economy is constantly expanding.

This is primarily explained by the fact that those sources facilitate a highly effective resolution of scientific and technical problems, enhance higher productivity, and reduce material losses. According to state statistics departments, the use of radioactive isotopes in industry alone for non-destructive quality control yields an annual economic impact of 30 million rubles for the country as a whole.

It would be difficult to overestimate the importance of ionizing radiation sources for the diagnosis and treatment of a large number of diseases, and for the conduct of scientific research concerned with various spheres of human endeavor.

The widespread use of various kinds of ionizing radiation sources in the national economy has made it necessary to create appropriate subdivisions within the state sanitation inspection system that would be responsible for controlling the safe use of ionizing radiation sources, environmental

protection against radioactive contamination, and the prevention of radiation sickness in persons who come into contact with the aforementioned sources in the course of their work [1, 2, 3].

One of these subdivisions is the radiology group that was organized in 1959 at the Gomel Oblast Sanitary-Epidemiological Station. The group was provided with model facilities equipped with the latest dosimetric and radiometric instruments which are being constantly updated.

At the very beginning of their operations the group specialists established close contact with the other operative subdivisions of the SES [Sanitary-Epidemiological Station], the radiology division of the oblast hospital, the oblast internal affairs administration, and departmental radiation safety services. Somewhat later (1965) a scientific-applied cooperative agreement was reached with the USSR Ministry of Health Institute of Biophysics which has been rendering considerable methodological and practical assistance to the oblast SES in the study of the radiation situation in the oblast.

The operational plans of the group cover all aspects of its activity. Annual schedules are compiled for examining sites that pose potential radiation hazards. Problems concerning the comprehensive control over the working conditions of personnel who handle ionizing radiation sources, e.g., in medical institutions and industrial enterprises, are discussed in concert with other SES divisions (industrial hygiene, municipal hygiene, and the sanitation-hygiene laboratories). Previously planned measures are carried at the established dates, and the execution of currently active instructional documents is concisely verified.

The oblast SES and its radiology group are giving due attention to administrative and methodological work.

Illustrative of that concern is the practical adoption of the projects stipulated in the "Instructions for the Operation of the SES's Radiation Hygiene Division" and corresponding instructions of the BSSR Ministry of Health. The indicated documents were examined together with the chief physicians of the rayon and city SESs as well as with industrial sanitation physicians. A set of measures was worked out for the implementation of those instructions which included the assignment of specific tasks for each SES as required by the specific site under inspection.

In order to check the radioactive safety of the public and personnel at all SESs that do not have radiology groups, an appropriate order provided for the appointment of a sanitation physician who would be responsible for maintaining state sanitation inspections of radiation hygiene at national facilities, and in rayon organizations and institutions. The training of such radiation hygiene physicians is now proceeding according to plan at the central bases and in the oblast SES in order to raise the level of their professional skills. Each SES in the oblast has industrial sector sanitation physicians who have gone through that training. The radiology

group specialists constantly control and direct their work.

Among the rayon and city SESs that have achieved considerable success in radiation control, mention should be made of the Mozyr City SES (Chief Physician V. V. Visloukh) the Rechitskiy (Chief Physician N. I. Shevchenko), and the Svetlogorskiy (Chief Physician L. A. Tsitko) rayon SES.

Considerable work is being undertaken to oversee the execution of the order issued by the USSR Ministry of Health "On the Status and Measures for Improving Radiation Safety of Personnel and Patients During the Use of Ionizing Radiation Sources at Institutions of the USSR Ministry of Health" and the corresponding decision of the collegium of the BSSR Ministry of Health.

A five-year plan for the improvement of working conditions and equipment safety at X-ray and radiology laboratories and divisions has been prepared in concert with the X-ray radiology division of the oblast hospital (chief S. I. Turayeva). Implementation of that plan is being constantly checked. At the present time 89 percent of the oblast's X-ray laboratories in various areas of specialization are in complete conformity with current sanitation standards and regulations. Contests are being held for the best X-ray division and X-ray laboratory.

Specialists of the oblast SES are actively participating in the production of methodological and information materials on civil defense medical services, radiation control at sites under state sanitation inspection, and the control of environmental radioactivity.

In spite of a certain increase in the number of radiological facilities in the oblast, the radiology group, actively assisted by industrial sanitation physicians of rayon and city SESs made significant achievements. Among those are annual inspections of all radiological facilities (the frequency of site inspection in 1984 was 1.5, and 1.3 with the participation of physicians).

All of the radiological facilities were brought into conformity with current sanitation standards and regulations in all inspection categories (protection, domestic sanitation conditions, inventory and storage of radioactive substances, etc.).

Many of the facilities under control are considered to be exemplary. Advanced experience schools have been organized at several of those facilities. These include the radiology division of the oblast hospital, the Rechits Geophysical Field Office of the USSR Ministry of the Petroleum Industry, the Scientific-Research Institute of Metal Polymer Systems of the BSSR Academy of Sciences, the production section for non-destructive control (isotope and X-ray flaw detection) of the special Belpromnaladka [Belorussian Industrial Set-Up] trust of the BSSR Ministry of Installation and Special Construction Work, the construction

materials combine of the BSSR Ministry of the Timber and Wood Processing Industry, the X-ray radiology division of the Gomel Oblast Hospital, and others.

In the last five years there have been no observed incidents of above-normal radiation levels on personnel or radioactive contamination of worker area and facilities above the permissible limits. There have been no job-related cases of radiation sickness.

The extent of personnel covered by medical inspections has been consistently at a 100 percent level in the oblast, and at 93.5 percent for the BSSR as a whole.

Permanent medical commissions have been assigned by zones (Gomel, Mozyr) for the purpose of making regular on-the-job inspections. An oblast commission is based at the Gomel Oblast Hospital. The commissions include all the specialists required by the corresponding order issued by the USSR Ministry of Health. It should be noted that the radiologist at the SES is actively participating in the oblast commission's work.

The oblast SES has skillfully combined all kinds of ways of urging enterprise managers to correct sanitation violations. These measures include sanitation instructions, reports to superior departments and Internal Affairs organs about observed violations, administrative fines, etc.

The imposition of fines as an extreme measure is rarely exercised (1 - 3 fines per year) and only with obligatory justification, and in 100 percent of the cases the fines are recovered.

One of the main activity areas of the State Sanitation Inspectorate has been its long-term (over 20 years) regular scientific and high quality control over the amount of radioactive substances in foodstuffs and raw food products and the accumulation level of long-life artificial radionuclides (strontium-90 and cesium-137) in critical organs of the human body.

Considerable work on the study of strontium-90 and cesium-137 content in foodstuffs, particularly in milk, has been underway in all rayons of the oblast.

The results of the studies undertaken by the Gomel Oblast SES have been regularly included into the scientific papers published by the Institute of Biophysics of the USSR Ministry of Health, and into the surveys made by the republic's SES on the radiation status in the BSSR. The number of radiochemical analyses completed by the radiology group at the oblast SES annually exceeds by two to three times those made by similar groups in the other oblasts (Mogilev and Minsk oblasts).

A characteristic feature of the work undertaken by specialists in the radiology group (engineer D. D. Dubovoy and laboratory physician V. M. Brizhanina) on laboratory control is their constant striving to master and apply new methods and instruments to their research.

Thus, when the new recommendations for laboratory control proposed by the BSSR Ministry of Health for the period 1981-1985 were being implemented, this group was one of the first to restructure their own work and adopt the suggested new methods.

The oblast SES is giving considerable attention to special training for personnel working in the area of ionizing radiation as well as those engaged in enforcing radiation safety regulations.

In order to accomplish this goal, seminars are being conducted on radiation safety with radiation counter specialists from medical and other institutions, persons responsible for the storage of radioactive substances, industrial sector sanitation physicians of the SESs, and other categories of specialists.

Ten seminars have been held in the last three years.

The experience gained by the oblast and rayon SESs on civil defense medical services and laboratory control also warrant attention.

All of the head sanitary-epidemiological stations are equipped with personnel, a laboratory time board and the essential work areas. In the last three years there have been eight practical exercises (cluster) in which 56 specialists participated.

A plan for training civil defense service and laboratory control personnel for the 1983-1985 period has been developed and is being implemented. Training exercises, including comprehensive exercises with other departments are being conducted regularly. Interaction with the oblast laboratories of the BSSR Ministry of Agriculture has been organized and is being implemented.

Thus, the oblast SES's properly directed efforts have enabled it to be among the forerunners in the field of radiation hygiene. The logical conclusion of those efforts was the formation of a republic advanced school at its base for organizing state sanitation control in the field of radiation hygiene.

The experience gained by the Gomel Oblast SES as an advanced republic school for the organization of state sanitation inspection in the field of radiation hygiene is being actively disseminated throughout the BSSR. Two republic-wide seminars on vital problems of radiation hygiene for specialists in the radiology subdivisions of SES and the departments have been held at its facilities. All the specialists from the SES radiology groups in the BSSR (sanitation physicians, engineers, laboratory

physicians) have undergone a special training program at the base of the republic advanced school.

The practical incorporation of the experience gained by the Republic Advanced School of Radiation Hygiene into the operations of the BSSR sanitary-epidemiological institutions will be under the control of the Main Sanitary-Epidemiological Administration of the BSSR Ministry of Health and the Republic SES.

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FIFTH ALL-UNION BIOCHEMICAL CONGRESS

Moscow BIOTEKHNOLOGIYA in Russian No 3, May-Jun 86
(manuscript received 6 Mar 86) pp 140-141

[Article by V.M. Lakhtin]

[Abstract] Some aspects of the regular session of the All-Union Biochemical Congress, held in Kiev 27-31 January 1986, are discussed briefly. More than 1700 delegates and guests attended. A table lists the 25 symposiums included in the meeting and shows the number of papers and exhibits presented at each. The 350 papers presented focused on 3 main trends: use of immobilized enzymes in biochemical analysis, immobilized enzymes and cells in fine organic synthesis and new methods and approaches in engineering enzymology. Subjects and authors of some of the papers presented at different symposiums are listed and described briefly.

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EXTRASENSORY MEDICAL DIAGNOSIS AND THERAPY REPUDIATED

Moscow IZVESTIYA in Russian 9 Aug 86 p 3

[Article by Academician N. Blokhin: "Extrasense Through the Eyes of the Medical Man"]

> [Text] The newspaper article "Man Through the Eyes of Physics" [No 363, 1985] and "Extrasense Through the Eyes of Physics" [No 184, 1986] evoked great interest on the part of readers. The editorial department also received a response from N. Blokhin, president of the USSR Academy of Medical Sciences. We present his point of view of the problem to readers.

Having read the article "Extrasense Through the Eyes of Physics" in IZVESTIYA, I felt like picking up our newspapers and journals of the last few years in order to understand how and why the problem of utilizing so-called extrasensors in medicine for the diagnosis and treatment of diseases was created.

Who should be called extrasensors, that is, supersensitive people?

Undoubtedly, people cannot be considered absolutely equal biologically. We know mathematicians whose talent was manifested in childhood, musically gifted people, and people completely lacking an ear for music.

There are people with excellent vision and people who need glasses from childhood. Sometimes deficiencies in the development of certain sense organs are compensated for by other organs. For example, a loss of vision leads to an unusual development of the sense of touch and hearing. See how easily blind people read texts made by raised letters, which are totally inaccessible to other people.

The heightened irradiation of infrared rays from the body surface among certain groups of people, who without any substantiation have recently been called extrasensors, is fully admissible. Without any basis, the physical field near the wrists of these people is called a biofield.

The human body constantly irradiates and absorbs infrared rays (radiation heat exchange). Thermography and infrascopy--methods based on the recording of the intensity of infrared irradiation--are valuable diagnostic means applied in medicine.

Differences in the degree of irradiation in individual people do not evoke any doubt. Another question is important: Why should people noted for heightened infrared irradiation in their wrist area be considered healers? Why do they have the right to medical practice not on the basis of education, but on the basis of a biological characteristic?

The problem of the need for medical education for medical practice has also been discussed in the press recently. LITERATURNAYA GAZETA has raised the question of the justification of treatment without a diploma. Along with this the newspaper IZVESTIYA, in the article "Behind the Scenes of One Sensation," exposing a group of rogues which not without the assistance of our press had engaged in the "treatment" of alcoholism, critically notes the fact that most people in this group lack specialized education.

Nowadays it is ridiculous to deny the need for education work in any scientific field. Medicine deals with man. Incompetent actions by people who do not have specialized training can be dangerous to health. Perhaps someone will suggest, for example, that motor vehicle drivers be relieved of the need to have their "diplomas"--drivers' licenses?

A large number of articles on extrasensors published in our newspapers and journals--KOMSOMOLSKAYA PRAVDA, TRUD, OGONEK, and TEKHNIKA MOLODEZHI--during past years were notable for loud headlines. These articles sounded like reports on the incomprehensible and mysterious influence of extrasenses on other people. They were reminiscent of the fascination with spiritualism, which gripped certain circles of society at the beginning of the century. In particular, it was described in "Plody prosveshcheniya" [Fruits of Education] by L. N. Tolstoy.

The interview with philosopher A. Spirkin, corresponding member of the Academy of Sciences (TRUD, 12 March 1980), stood out among many articles. He asserted that an extrasensor was capable of "diagnosing a disease both near and at a very great distance from the patient, even from a photograph, a picture, or a sculpture depicting the patient."

The same article reported on how the extrasense Dzhuna Davitashvili in Tbilisi cured a lingering trophic ulcer in 15 minutes (Georgian physicians maintain that in reality there was nothing of the kind.).

In the same interview A. Spirkin says the following: "Green plants, which are 'witnesses' of criminal events, will transmit very important information, which the experienced extrasensor will decode." I think that no specialist in crime detection has accepted this statement as a guide to action.

This article also states that among extransors there is a girl who sees a person "through" his internal organs, how his heart beats, and how his blood flows--like color x-rays.

In conclusion the author justifies church legends about various cures and other miracles, ascribing them to the notorious biofields.

These statements emanating from a representative of materialistic philosophy disposed readers toward the mystic way. Actually, how can biofields be formed around such inanimate objects as a patient's photograph or sculpture?

An article by L. Kolodnyy (KOMSOMOLSKAYA PRAVDA) tells how Dzhuna Davitashvili approached a bouquet of roses and drew the author's attention to the fact that they did not smell. Then after several passes with her hands over the bouquet the flowers began to be fragrant and rose petals began to open before their very eyes. "At that moment Dzhuna, in a black sarafan, with her loose black hair, stood over the roses like Olesya glorified by Kuprin". As you can see, pure lyricism.

That article also evoked foreign comments. The West German journal DER SPIEGEL (No 39 of 1980) expressed surprise at its appearance in a newspaper called upon to educate Soviet youth in the spirit of dialectical materialism. The journal cited the following quote from Kolodnyy's article: "If one looks at Dzhuna's photograph made with an ordinary camera on black-and-white film, one sees how her hands emit light and there is also a glow over her head..."

Incidentally, in the last few years many photographs of this woman have been published in the press, including several pictures in the above-mentioned West German journal. However, in order to see a nimbus around the head in them, apparently, one must also be an extrasensor.

I do not want to cite any more literary examples of the active propaganda of the "new method of diagnosis and therapy" conducted by a group of journalists endlessly accusing the USSR Ministry of Health and Soviet medical scientists of a lack of attention to this matter.

Incidentally, several years ago a commission of the USSR Ministry of Health checked the medical activity of so-called extrasensors. The results of this check were published in LITERATURNAYA GAZETA (27 August 1980). However, the statement by authoritative scientists about the lack of any basis for talking about special biofields in contrast to ordinary physical fields and about special healing powers of extrasensors did not satisfy the apologists of extrasenses, who continued their propaganda.

Physicists who became interested in extrasensors studied two of them. They noted that "the following changes in the physical fields around their wrists were recorded: a characteristic change in infrared thermal irradiation, a rise in the intensity of a very weak optic luminescence, an increase in the magnetic field, and an occurrence of low-frequency fluctuations in the electric field" (IZVESTIYA, No 184).

All this does not evoke doubts and does not require debates. However, in no way does this explain the diagnostic capabilities of extrasensors about which so much has been written. With modern diagnostic instruments--x-ray, ultrasonic, endoscopic, and so forth--hardly anyone will be able to substantiate the introduction into clinical practice of an extrasensor who, passing his hand along the body of a person and even around his photograph, would accurately determine his afflictions. With regard to the possibilities of utilizing extrasensors for the treatment of some diseases, it should be stated that physiotherapeutic methods of treatment, including the application of infrared rays in medicine, have been known for a long time. For this there is equipment making it possible to accurately measure out a therapeutic agent.

The replacement of physiotherapeutic equipment with a person possessing a heightened irradiation of infrared rays would seem ridiculous, to say the least. Furthermore, the propagandists of extrasensors say that irradiation from the hands of some of them causes burns and that quite often it is impossible to measure out an effect because a great deal depends on the working or nonworking state of the extrasensor and on his mood.

Irradiation noted by physicists in extrasensors can hardly produce an especially remarkable effect. However, physicists interested in this can make equipment accurately reproducing the irradiation of the hands of an extrasensor and transfer it over to physicians for verification.

One thing can be said confidently: In cases of successful activity on the part of extrasensors, their association with patients and psychotherapy, which, in general, plays a tremendous role in medicine, plays the main part. The uproar raised around extrasensors actively contributes to an increase in the psychotherapeutic effect.

If only modern polyclinic physicians had a great deal of time for a close contact with patients and for studying the personality of every patient! If only a doctor did not have to limit himself to 10 or 12 minutes, which include a conversation, an examination, a prescription of treatment, and even the management of a "case history"!

The attempt to deny a psychotherapeutic effect and to attribute everything to the irradiation of the hands of extrasenses goes hand in hand with the persistent desire of some people, including press workers, to introduce often ignorant "doctors" without diplomas into medical institutions.

It is interesting to note that with the abundance of reports on the success of extrasensors, there has been no single report on their successful treatment of animals. This is quite understandable: Animals do not read newspapers and are not "gripped" by the effect of sensational reports.

Finally, what is the question? Is it possible to talk seriously about the advisability of replacing modern diagnostic equipment and laboratory research with people with a heightened infrared irradiation from wrists? Or about inviting people serving as a source of irradiation to physiotherapeutic departments of hospitals instead of equipment for infrared irradiation, which accurately measures out an existing agent?

And all this is propagandized today, in an era of scientific and technical progress!

From the editorial department. Publishing the letter from the president of the USSR Academy of Medical Sciences, we do not undertake the task of evaluating the articles in other press organs discussed in it.

We would like to recall that in the article "Extrasense Through the Eyes of Physics" the newspaper only raised the problem of the need for a serious investigation of the pnenomenon. It was stated that the lack or brevity and incompleteness of research was the reason for the appearance of different interpretations, down to the most ridiculous, speculative, and fantastic, as well as of the sensation created by enterprising people speculating in unsolved problems of medicine. The article "Extrasense Through the Eyes of Physics" stated the following: In order to gain an understanding of the mechanism of this phenomenon, physicists need the help of physicians and physiologists. Then, apparently, they will be able to develop new diagnostic and therapeutic equipment.

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SCIENTIFIC-TECHNICAL COOPERATION WITH SOCIALIST COUNTRIES

Moscow FARMATSIYA in Russian No 2, Mar-Apr 86
(manuscript received 25 Feb 85) pp 65-67

[Article by V.Z. Lavrentyeva and K.D. Sedova, All Union Scientific Research Institute of Pharmacy, Moscow]

[Abstract] A review of cooperative projects carried out between the USSR and various SEB [CMEA] was given. The following projects were reported: development of methods for determination of the utilization of drugs, preparation of Compendium Medicamentorum, studies of polymers and their use in medical applications, evaluation of multicomponent drugs, relationships between drug formulation and effectiveness, development of synthetic compounds and their preparative technology, analysis of pharmaceuticals and drug standardization, drug quality control based on modern instrumental analysis and development of new equipment. Future plans for such cooperation include: unification of methods for determination of supply and distribution of drugs, new polymer materials, biopharmaceutical studies, analysis and standardization of drugs and development of new equipment.

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SCIENTIFIC-TECHNOLOGICAL COOPERATION WITH FRANCE IN FIELD OF PHARMACOLOGY

Moscow FARMATSIYA in Russian No 2, Mar-Apr 86 (manuscript received 15 Apr 85) pp 68-70

[Article R.I. Tentsova, M.T. Alyushin and V.Z. Lavrentyeva, All Union Scientific Research Institute of Pharmacy, Moscow]

[Abstract] At their last meeting, French President and Soviet Secretary General confirmed continuation of French-Soviet cooperation in several

scientific areas. The participants on the side of Soviet Union include: All Union Scientific Research Institute of Pharmacy, All Union Scientific Research and Experimental Institute of Medical Technology and State Scientific Research Institute for Standardization and Control of Medicinal Preparations. The projects of common interest include: development of control and utilization methodology for medical equipment and supplies; studies of polymer containing drugs; studies of antibiotics; developments of drug standards; clinical drug evaluations and organization of symposia and workshops. A more detailed report was given at the 5th Soviet-French Symposium on biopharmaceutical evaluation of drugs.

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